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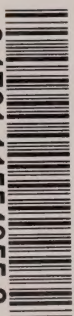
# SOCIAL DIMENSIONS OF ENVIRONMENTAL PLANNING- AN ANNOTATED BIBLIOGRAPHY

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Prepared by L.J. D'Amore & Associates Ltd.

Office of the Science Advisor  
Report No. 17

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# SOCIAL DIMENSIONS OF ENVIRONMENTAL PLANNING - AN ANNOTATED BIBLIOGRAPHY

Prepared by L.J.D'Amore & Associates Ltd.

***A project of the Banff School of the  
Environment and Environment Canada***


Office of the Science Advisor

Report No. 17

ENVIRONMENT CANADA

OTTAWA

1979



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## FOREWORD

A distinctive and undeniable characteristic of modern society is the degree to which its various activities, problems and challenges have become interactive and dependent upon one another. Issues which only a generation ago could be considered logically in their own contexts - the control of the economy, the profitable use or conservation of natural resources, the maintenance of law and order, the health of people and the rights of individuals and many other legitimate concerns have, with a rapidity that threatens to overwhelm the effectiveness of our traditional disciplines and responsibilities, become parts of a dynamically related and inter-responsive system that is not only unsuited to traditional methods of management but is often very responsive to subtle and at first unrecognized influences.

The emergence and growing importance of environmental issues is a direct result of the increasingly obvious interactive relationships between activities undertaken for one set of purposes, and their effect on the natural world or on persons or activities not connected with the original purpose. Concern about the accelerated rate of change, not only in the environment affected by human activities but also in the nature of the impacts themselves and in societal response to interactive changes, has given rise to a whole new activity of planning and analysis which has come to be known by the awkward and rather inaccurate name of "environmental planning". Originally concerned mainly with planning and management studies related to the effective and economic control of pollution, these studies have grown, in ragged fashion, to encompass questions of the broader environmental effects of resource management policies and the conflicts between short-term and long-term costs and benefits of environmental health, intangible amenities, and economic development strategies. Increasingly, environmental planning has taken on a social dimension. The "human costs", the mechanisms of public or individual response or participation in regard to the present or future environment and available natural wealth, the problem of which risks are acceptable to the public and which ones are not - these have become legitimate elements of environmental planning, and organized knowledge about them is essential to dynamic society and culture. All of these are leading, by paths that are not yet clear, toward increasing our ability and capacity not to dominate or attempt to "manage" our environment, but to make full and sustained use of it by living in harmony with it.

This report is a first attempt to list and classify the most significant English language North American literature and study reports on the social aspects of environmental planning. It is hoped that it will be useful both as a reference and as an indication of the scope and structure of an increasingly important aspect of modern life.

If this report is found to serve a useful purpose, it is planned that up-dated bibliographies covering both French- and English-language studies will be issued from time to time. Suggestions and comments as to the usefulness and organization of the present report will be most welcome.

E.F. Roots  
Science Advisor  
Department of the Environment

## Préface

Le grande interdépendance des activités, des problèmes et des défis actuels est indéniablement caractéristique du monde d'aujourd'hui. De nombreuses questions, qu'il était possible d'isoler il y a à peine une génération, comme le contrôle de l'économie, l'exploitation commerciale des ressources naturelles et leur sauvegarde, le maintien de la loi et de l'ordre, la santé publique, les droits des individus et bien d'autres, sont devenues, à un rythme tel que nos structures classiques risquent de perdre leur efficacité, des éléments interreliés formant un ensemble évolutif auquel s'appliquent mal les méthodes de gestion classiques, et fort sensible à des influences difficiles à percevoir et à déceler.

Les questions environnementales, dont l'importance ne cesse de croître, découlent directement des interactions de plus en plus évidentes entre des activités servant un ensemble d'objectifs et leur effet sur la nature, ou sur des personnes ou des activités étrangères aux objectifs visés. L'observation du rythme accéléré d'évolution, non seulement du milieu touché par les activités humaines, de la nature des effets eux-mêmes et de la réaction de la société aux changements interactifs, a donné naissance à une toute nouvelle forme d'activité de planification et d'analyse qu'on en est venu, faute de mieux, à appeler "planification de l'environnement". S'il s'agissait à l'origine d'études de planification et de gestion liées à la lutte efficace et à bon prix contre la pollution, on se retrouve aujourd'hui, au terme d'une dérive tourmentée, dans le vaste champ des effets sur l'environnement des politiques de gestion des ressources et des conflits entre les coûts et avantages, à court et à long termes, de la sauvegarde du milieu, des richesses intangibles et des stratégies d'expansion économique. Puis, la planification de l'environnement prend une portée sociale de plus en plus grande. Les "coûts humains", les mécanismes de réaction ou de participation du public et des particuliers à l'égard de la condition actuelle ou future du milieu et à la détermination des risques acceptables pour la population tombent tous sous le sens de la planification de l'environnement. Il faut donc bien savoir s'y retrouver pour assurer le dynamisme de la société et de la civilisation. Tout cela nous amène, par un cheminement non encore clair, à vouloir accroître nos moyens, non pas pour dominer, ni même pour tenter de "gérer" notre environnement, mais pour l'utiliser pleinement et de façon soutenue, en harmonie avec le milieu.

C'est la première fois que l'on tente de faire la nomenclature de la plus importante documentation en langue anglaise de l'Amérique du Nord sur les aspects sociaux de la planification environnementale. Nous espérons que le présent rapport sera utile à titre de source de consultation et d'indication de la nature et de la structure d'un aspect de la vie moderne qui gagne en importance.

Nous comptons publier de temps à autre des bibliographies françaises et anglaises si le présent ouvrage sert une fin utile. Nous invitons donc tous ceux qui aimeraient nous faire part de leurs impressions et suggestions à nous les communiquer.

E.F. Roots  
Conseiller en sciences  
Ministère de l'Environnement

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## INTRODUCTION

The concern for Social Dimensions of Environmental Planning is a relatively recent phenomenon in both Canada and the United States. It would appear to have its origin in the late 1960's with the confluence of several societal trends. The first of these was the beginning realization of the effects of accelerated rates of change as well documented by Alvin Toffler in Future Shock.

The second trend was the heightened public awareness of environmental degradation and its social consequences resulting from a fast-growing, affluent, and consumptive society. Complementing this trend was a beginning acknowledgement of and concern for the depletion of non-renewable resources. The Club of Rome study Limits to Growth generated an international dialogue on these issues which still continues in growth/no-growth debates.

Also evident was a beginning shift in public values. The concept of a "Conserver Society" began to emerge from the Science Council of Canada. Values concerned with "social justice" and "quality of life" were reinforced and within this context, increased concern for the "human costs", the "social costs" of "progress" through large-scale developments, began to surface. This resulted in demands for public participation in the decision making process related to developments that would have substantial impacts on people and their communities.

This annotated bibliography is a first attempt to bring together significant literature, both published and unpublished, reflecting current thinking, concepts, observations, and methodologies related to the Social Dimensions of Environmental Planning. This initial report reviews English-language literature in North America only; it is hoped that subsequent work will cover both French and English studies and include significant contributions from outside North America which are relevant to Canada.

The approach to the preparation of the bibliography consisted of two phases:

- I. Identification of key researchers
- II. Selection, annotation, and cross-referencing of documents

The identification phase was basically an iterative process aimed at identifying the main researchers engaged in various social aspects of environmental planning. An initial listing

was derived from attendance at conferences, and personal and telephone interviews with well-known academics in the field, consultants, and key civil servants in both Canada and the United States.

Letters were sent to the individuals thus identified, explaining the objectives of our project and requesting that they send us reports, articles, papers, books, or other references related to their work and which they believed relevant to the theme of Social Dimensions of Environmental Planning. In addition, they were asked to suggest other individuals, organizations, key references and/or sources of information.

Through the response of this first "wave" and through a supplementary literature search, more individuals, references, and sources were identified. These in turn formed the basis of a second iteration in our identification process. Similar letters were sent to this second "wave".

A third iteration resulted from persons referred by the second "wave" and a review of the material that was received from our respondents in the first and second "waves".

To provide an incentive to each person contacted, we agreed that they would receive a copy of the annotated bibliography when it was completed. Of the total of 166 contacts made, 117 or 71% responded. Table 1 indicates the number of contacts made and the degree of response achieved for different sectors.

The second phase involved a selection of references from among the materials received from or recommended by our respondents. Because the field is a fairly recent one, it was decided to focus on research done in the last five years, 1973 to 1978. A few less recent works which seemed of particular interest were also included. Also excluded from the bibliography were a number of references which dealt entirely with the built and/or urban environment. This resulted in a total of 287 references which have been annotated, classified, and cross-referenced. About half of these are American and half Canadian, with a small number from other countries.

Table 2 indicates the classification categories we decided on and the relative distribution of entries by category.

TABLE 1  
CONTACTS AND RESPONSES

Affiliation	CANADA		U.S.A.		TOTAL	
	Contacts	Responses	Contacts	Responses	Contacts	Responses
Academic	48	30	37	30	85	60
Government	32	28	19	12	51	40
Other	15	7	15	10	30	17
TOTAL	95	65	71	52	166	117

TABLE 2  
DISTRIBUTION OF ENTRIES BY CATEGORY

I.	State of the Environment	13%
II.	Natural Resource Planning and Management	22%
III.	Social Impact Assessment (SIA)	20%
IV.	Resource Communities	5%
V.	Northern Development	10%
VI.	Man-Environment Interactions	15%
VII.	Public Participation	11%
VIII.	Bibliographies	5%

For each reference, standard bibliographic information is given. As well, for those items which may not be easily accessible or have never been published, additional details are included, where available, to help the reader locate either the document or the author. The length of each document is also indicated; while physical size is not necessarily a criterion of depth, it does suggest the approximate scope of a work.

Some of the papers received were not dated (n.d.); in these cases, the approximate date of writing is shown in brackets, based on the most recent reference in the paper. Finally, each item is prominently indicated as Canadian (CAN) or American (AM) for those readers who wish to make that distinction; a small number which originate from elsewhere are marked as International (INT).

#### Abbreviations

n.d.	no date
(c. 1976)	about 1976
CAN	Canadian
AM	American
INT	International, or countries other than Canada and United States

The annotations are of a descriptive nature and aim to inform the reader of the scope of each work, its major findings or conclusions, and any special features, such as an extensive reference list. The majority of the items have been annotated based on a review of the documents. For some, the abstract or a portion of the text was found to be sufficiently concise and informative; where these are used verbatim, they are indicated with quotation marks.

The bibliographic references have been classified into eight broad CATEGORIES, as follows:

	<u>Series</u>
I. STATE OF THE ENVIRONMENT	100s
II. NATURAL RESOURCE PLANNING AND MANAGEMENT	200s
III. SOCIAL IMPACT ASSESSMENT (SIA)	300s
IV. RESOURCE COMMUNITIES	400s
V. NORTHERN DEVELOPMENT	500s
VI. MAN-ENVIRONMENT INTERACTIONS	600s
VII. PUBLIC PARTICIPATION	700s
VIII. BIBLIOGRAPHIES	800s

References within each category are numbered consecutively within each series, eg. 101, 102, 103.... Each category is further divided into a number of HEADINGS, e.g., State of the Art, Policy Development, Methodologies, Case Studies.

Due to the multidisciplinary nature of much of the material, three types of cross-referencing have been prepared to increase the usefulness of the bibliography.

- (1) Most of the headings are prefaced with "See also items ...". This refers the reader to references under other headings within the same category which may be useful. For example, a reference under the heading "Policy Development" may also have a discussion on the state of the art; the "State of the Art" heading would therefore indicate this cross-reference.
- (2) Each category concludes with the heading "Other Related Items". This locates references in other categories that also deal significantly with the theme of that category. For example, the NORTHERN DEVELOPMENT category contains several studies of relevance to social impact; the SOCIAL IMPACT ASSESSMENT category would therefore list the numbers of those items under "Other Related Items".
- (3) The categories and headings can be considered functional classifications. For the reader who wishes to pursue a more specific TOPIC, a "Matrix of Selected Topics" has been prepared. This includes such topics as Agriculture, Forests, Transportation, and Water Resources, and the references which discuss them. Further explanation may be found in the Matrix, which follows this Introduction.

A final feature of this report is the "Preliminary Research Network", which lists the researchers and organizations active in one or other of the Social Dimensions of Environmental Planning. Addresses, where available, are supplied as well as a listing of their contributions which appear in the bibliography.

# MATRIX OF SELECTED TOPICS

The publications included in this bibliography have been classified by category and heading. Some readers may wish to pursue topics of more specific character which crosscut these classifications. This matrix lists twenty-three such topics and indicates the appropriate items by number. The reader can, if he so wishes, examine various aspects of a topic, from SIA to public participation, or select only one dimension. The matrix also enables the reader to select only Canadian or American documents.

Guide	Series
I.	STATE OF THE ENVIRONMENT
II.	NATURAL RESOURCE PLANNING AND MANAGEMENT
III.	SOCIAL IMPACT ASSESSMENT
IV.	RESOURCE COMMUNITIES
V.	NORTHERN DEVELOPMENT
VI.	MAN-ENVIRONMENT INTERACTIONS
VII.	PUBLIC PARTICIPATION
VIII.	BIBLIOGRAPHIES

Topics	CANADIAN	AMERICAN
Agriculture	101,110,111,122,131. 247,260,261. 414. ---	---. 224. ---. 617.
Air and Atmosphere	101,123. 232,235. ---	---. ---. 602.
Conservar Society	128,131,132,135. 237. 638.	---. ---. ---
Ecosystem Planning and Management	106,107,109,112,114,127.	114.

Topics	CANADIAN	AMERICAN
Energy Development	122, 128, 131, 132, 136. 252. ---. ---. 508, 509, 512-514, 516, 517, 522, 523, 525. ---. 801, 805.	---. ---. 304, 314, 327. 403, 405, 407, 409. ---. 720. 801, 806.
Alternative and Renewable Fuels	128, 132, 135. ---	---. 350.
Nuclear Power	101, 131. ---	---. 313, 319, 329, 333, 340.
Utility (Electric) Planning	---. 515, 518-520, 524.	334. ---
Fisheries	122. 204. 521.	---. ---. ---

Topics	CANADIAN	AMERICAN
Forests	109, 118, 122, 123. 215, 219, 227, 229-231, 247. 404. ----. ----. ----	----. 211, 222, 225, 240, 243, 248-250, 255. ----. 610, 612-614, 618, 637. 722. 810.
Land Use	110, 111, 129. 216, 217, 226, 260, 261. ----. ----. 504. 639. ----	----. 224, 236, 248, 255. 326. 409. ----. 601-603, 609, 610, 612-614, 616, 618, 637, 642. 706, 720.
Mineral Resources	237. ----. 402, 404, 406.	236. 340. 407.
Parks	213, 221, 231, 245. 631. ----	207, 251. 615, 618, 643. 810.

Topics	CANADIAN	AMERICAN
Recreation and Tourism	119,129. 213,231,239,245. 315. 524,527. 631,632. ----. 812,813.	103. 205,209,211,223,236,240,251,255,256. 351. ----. 601-603,606,609,610,612-616,618,643. 703,720. 810,812,813.
Regional Planning	110,111,119. 217,219,260,261,263. 410,414. 501.	----. 242,255,263. 405,407. ----.
Transportation	122. ----. 404. ----	----. 336,338-340. ----. 708,724,728.
Use/User Conflicts	110,118. 202,213,215,219,226,233. ----	----. 205,208,210,212,222,236. 634.
Water Resources	101,112,114,122,123,126. 202,203,214,218,219,234,238,258,259,262,263. 348. 504. 619,632. 702,713,726,731,732.	114. 208,242,244,253,254,256,257,263. 311,317,325,332,333,345-347,349,353-356. ----. 642. 714-716,720,727,731,732.

Topics	CANADIAN	AMERICAN
Coastline Management	106, 112, 126. 205. ---	---. ---. 609, 634, 642.
Flood Management	101. 262. ---. ---	---. 224, 254. 340. 633.
Great Lakes	114. 214, 218, 258, 259, 263. 632. 731.	114. 208, 257, 263. ---. 731.
Wilderness	---. 226, 228, 231. ---. ---	103. 210, 212. 328. 613, 614, 618, 643.
Wildlife	123. 219. 402. 521. ---	115. 209, 241. ---. ---. 630.

## I. STATE OF THE ENVIRONMENT

The documents in this category address environmental issues in a comprehensive fashion. Those which are context-specific may be found in other categories. The majority of the references in this category are Canadian, with a small number of American and some United Nations documents.

The references are classified under four headings: Overview, Policy Development, Environmental Monitoring, and Future Trends. The items in the first group are of two types: those which give a broad overview of the state of the environment and those which contain collections of papers on a wide variety of environmental issues. The items under Policy Development consider how present policies on environmental planning and management should be changed to take into account an increasing awareness of the interrelated nature of man and his environment. Environmental Monitoring consists of statistics or information on the state of the environment, and those agencies collecting such data, as well as descriptions of methods of environmental data collection. Finally, those documents under Future Trends examine the implications for society of an environmentalist approach to planning and management, especially in terms of changing attitudes and new technology development.

## I. STATE OF THE ENVIRONMENT

### Overview

101. Canadian Environmental Advisory Council.  
1978 Annual Review 1976: State of the Canadian  
CAN Environment, 81 pages.  
Available from The Executive Secretary, Canadian  
Environmental Advisory Council, c/o Department of  
the Environment, Ottawa, Ontario K1A 0H3 (Cat. No.  
En 91-1976).

This Annual Review has two parts. In Part A there is a summary of the business of the Council, the meetings held, topics discussed, publications issued and future activities of the Council. Part B contains a number of accounts of the state of the Canadian environment, in areas such as nuclear power and air quality. Most of the studies led to specific recommendations concerning areas needing new initiatives.

102. Dansereau, Pierre.  
1975 Harmony and Disorder in the Canadian Environment,  
CAN 146 pages.  
Canadian Environmental Advisory Council. Occasional  
Paper No. 1.  
Available from Information Canada (Cat. No. En 94-1/1975)  
or Publications Distribution Centre, Environment  
Canada, Ottawa, Ontario K1A 0H3. French version  
available.

This book is an overview of the present state of the environment in Canada. In Chapter 1 the author examines the triptych of ecology-environment-management which, he says, is the proper background of environmental science. Chapter 2 delineates the requirements for environmental planning and Chapter 3 looks at the forces of environmental control (such as social pressures, political power, etc.). Chapter 4 looks at points of crisis in Canada, for example, with regard to wildlife or to rural life, and Chapter 5 attempts to develop priorities for dealing with the perceived crises.

103. Little, Ronald L., editor.  
1977 Special issue: Contributions to environmental  
AM sociology.  
Western Sociological Review, Volume 8, Number 1,  
112 pages.

## I. STATE OF THE ENVIRONMENT

This special issue attempts to reflect a growing interest in the link between concern for the environment and subsequent behaviour. It includes a wide variety of articles ranging from theoretical discussions to details of applied research.

Charles C. Geisler. Exporting pollution: The case of Japan.

E. Jackson Baur. Mediating environmental disputes.

Allan Malkis and Harold G. Grasmick. Support for the ideology of the environmental movement: Tests of alternative hypotheses.

Rhoda E. Estep. Legislative reform as a social movement strategy: The deposit bill and the environmental movement.

Joyce McCarl Nielsen and Russel Endo. Where have all the purists gone? An empirical examination of the displacement hypothesis in wilderness recreation.

Charles F. Cortese and Bernie Jones. The sociological analysis of boom towns.

Ted L. Napier and Cathy Wright Moody. The social impact of forced relocation on rural populations due to planned environmental modification.

Arthur S. Wilke and Harvey R. Cain. Social impact assessment under N.E.P.A.: The state of the field.

Riley E. Dunlap and Kent D. Van Liere. Further evidence of declining public concern with environmental problems: A research note.

### Policy Development

See also items 129, 130, 132, 136.

104. Canada. Environment Canada.  
1972 Conference on the Human Environment. A Report on  
CAN/ Canada's Preparations for and Participation in  
INT the United Nations Conference on the Human  
Environment, Stockholm, Sweden, June 1972, 71 pages.  
Available from Information Canada, Ottawa, Ontario  
K1A 0S9 (Cat. No. En 21-872). French version  
available.

This report on the United Nations Conference on the Human Environment is aimed at the Canadian public. It summarizes Canadian public involvement and preparations for the Conference, reviews Conference highlights, and considers some implications for Canada of the action taken at Stockholm. The five appendices comprise the major portion of the report. The first appendix lists Canadian delegates and advisors to the Conference.

## 1. STATE OF THE ENVIRONMENT

Appendix 2 consists of the Declaration of the United Nations Conference on The Human Environment, including 26 common principles on all aspects of the environment. Appendix 3 is an Action Plan for The Human Environment. Its 109 recommendations are grouped in five categories: (1) planning and management of human settlements for environmental quality; (2) environmental aspects of natural resources management; (3) identification and control of pollutants of broad international significance; (4) educational, informational, social, and cultural aspects of environmental issues; and (5) development and environment. Appendix 4 gives some general principles for the assessment and control of marine pollution. The last Appendix identifies about 400 authors and submissions to the Canadian National Preparatory Committee of the Conference, on all aspects of the environment.

105. Canada/MAB. Prepared by The Canadian Committee for MAB  
1974 and The Interdepartmental Committee for MAB.  
CAN Research Strategy: Provisional Concept, Report 2,  
19 pages.  
Canadian MAB Programme Secretariat, Liaison and  
Coordination Directorate, Department of the  
Environment, Ottawa, Ontario K1A 0H3. August 1974.  
Bilingual.

This report sets out the possible methods to be used for the planning of MAB projects. It was prepared as a discussion paper for MAB national workshops. It introduces the concept of man and his relation to the "biosphere" in which he exists and the fact that, to develop environmental planning processes, various disciplines with different views of the man-biosphere relationship, will be required to work together in an integrated planning process. This process will have three levels of policy, program and project planning. The sequence of the integrated planning process is discussed and the report concludes that continuous monitoring is essential in order to obtain the feedback from any practical implementations of the results of research programs.

106. Canada/MAB.  
1976 Sub-Program 3 - Coastal Ecosystems: Research  
CAN Framework, Report 7, 16 pages.  
Canadian MAB Programme Secretariat, Liaison and  
Coordination Directorate, Department of the  
Environment, Ottawa, Ontario K1A 0H3. March 1976.  
Prepared for The Canadian Committee for MAB and  
The Interdepartmental Committee for MAB. Bilingual.

## I. STATE OF THE ENVIRONMENT

The main guidelines for the Working Group on Coastal Ecosystems are directed towards the question of: "How to achieve optimal benefits and avoid adverse effects on human social structures, biological productivity, recreational opportunity and economic returns in the management of coastal ecosystems". The program focuses on those problems that occur where freshwater meets saltwater. It discusses social, natural and management processes and through this discussion emphasizes the integrative aspects of research. The research concerns are brought together in the summary and conclusions, and specific research criteria are suggested.

107. Chant, D. A. and A. H. Clouter.  
1973 Parameters for Ecosystem Evaluation, 15 pages.  
CAN Environmental Systems Branch, Office of The Science  
Advisor, Planning and Finance Service, Environment  
Canada. Occasional Paper No. 1.

This report considers the problems involved in determining the "intrinsic natural value, or worth" of a particular ecosystem. Ecosystems were defined as "natural areas that contain a degree of homogeneity in relationships, processes and functions". The researchers attempted to divorce the evaluation as much as possible from "non-centered factors and subjectivity", and excluded aesthetic, social and economic factors. They found, however, that this approach had many pitfalls and that it is necessary to add "human values to the so-called rational, intrinsic aspects", otherwise, unacceptable and possibly dangerous conclusions could result.

108. Chevalier, Michel and Thomas Burns.  
1978 A Public Management Strategy for Development and  
CAN Environment: Joint Project on Environment and  
Development 4, 33 pages.  
Prepared for the Policy Branch, Canadian International  
Development Agency and the Advanced Concepts Centre,  
Department of the Environment, Ottawa.

This paper looks at public decision-making and management and their consequences for man-environment relations. It argues that, in order to obtain development that is not disruptive to the environment it will be necessary to develop new procedures and institutions of public management. This is followed by an analysis of two management strategies: management by objectives (MBO) and management by interests (MBI). Finally, the report concludes that, if an equilibrium is to be maintained between the development of a community and its environment, the MBI approach to management is best able to achieve this purpose.

## I. STATE OF THE ENVIRONMENT

109. Clark, William C., Dixon D. Jones, and C. S. Holling.  
1977 Lessons for Ecological Policy Design: A Case Study  
CAN of Ecosystem Management, 138 pages.  
Institute of Resource Ecology, University of  
British Columbia, Vancouver, B.C., Canada  
V6T 1W5. November 1977. Research report,  
internal publication.

This paper uses a case study with a specific focus, i.e., the management problem presented by the competition between man and insect (the spruce budworm), to evaluate the ecological policy design process and where weaknesses are found, to develop alternatives. A combination of simulation modeling and topological analysis is used to analyze the temporal changes which might take place under both natural and managed conditions. The fine goal is to transfer the models and procedures from the academic realm to the realm of reality, as represented by resource managers and politicians.

110. Coleman, Alice.  
1976 Canadian Settlement and Environmental Planning,  
CAN 70 pages.  
Urban Prospects Series, The Ministry of State for  
Urban Affairs, published by The Macmillan Company  
of Canada Limited. (Supply and Services Canada  
Cat. No. SU 32-3/1976-5F). French version  
available.

Early planners were basically specialists, however, the lack of co-ordination amongst these specialists led eventually to the development of a more "generalist" planner who attempted to co-ordinate the needs of communities. Despite this adaptation, the planning process is still a city-centered one and does not consider the environment as a whole. The author envisages a further refinement which would be the development of an integrated approach taking into account all types of environment and considering them as part of one system. She calls this the "environmental planning" approach.

111. Dorney, R. S. and D. W. Hoffman.  
Development of landscape planning concepts and  
CAN management strategies for an urbanizing agri-  
cultural region, about 32 pages.  
Landscape Planning. Special Canadian issue.  
To be published.

## I. STATE OF THE ENVIRONMENT

In an attempt to explain the difficulties involved in developing landscape management strategies for southern Ontario, the author examines historical and cultural land-use trends in the area. These trends have led to the acceptance of an urban-centered region system as the framework for land-use planning and management. Thus, urban technology affects not only urban areas but agricultural and natural areas as well. The role played by both public and private institutions is discussed with particular reference to their appropriate levels of intervention.

112. Fox, Irving K. and J. P. Nowlan.  
1978      The Management of Estuarine Resources in Canada,  
CAN      51 pages.  
            Canadian Environmental Advisory Council, Ottawa,  
            Ontario. Report No. 6. March 1978.

Because of the complex series of biological interactions that take place in the estuarine ecosystem it is essential that government policy is clear and concise, and that the administrative machinery established to manage the system functions effectively. This study by the Canadian Environmental Advisory Council, of a number of Canadian estuaries, evaluates the systems of management used and suggests methods to improve the structures and procedures.

113. Francis, George.  
1976      Eco-Development, National Development and International  
CAN      Co-operation Policies: Report on a Workshop, 24 pages.  
            Prepared for the Policy Branch, Canadian International  
            Development Agency and the Advanced Concepts Centre,  
            Department of the Environment, Ottawa.

This is the report of a workshop on international development examining the interaction between environment and development and in particular "the concrete implications of eco-development relevant for international cooperation". The report discusses the purpose of and background to the workshop and the fundamentals of "eco-development". It then describes the discussions concerning the ways in which governments can react in response to the new eco-development perspective and, how the eco-development approach may be applied to major "problematiques". Finally, the workshop reaches some preliminary conclusions and suggests some follow-up steps that could be taken.

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114. Great Lakes Research Advisory Board.  
1978 The Ecosystem Approach: Scope and Implications of  
AM/ an Ecosystem Approach to Transboundary Problems in  
CAN The Great Lakes Basin, 47 pages.  
Special report to the International Joint Commission,  
Regional Office, 100 Ouellette Avenue, Windsor,  
Ontario N9A 6T3. July 1978.

This report, by The Great Lakes Advisory Board to the International Joint Commission, deals with "the scope and implications of the ecosystem approach in problem identification, research and management in The Great Lakes Basin". This approach views man as part of nature and relates man's activities, both biological and technical, to the carrying capacity of the ecosystem; it is the "man-in-a-system" concept, rather than the "system-external-to-man" concept. The benefits of this approach are that it would encourage an attitude that considers the effects of discharging wastes into an ecosystem of which man is a part rather than into some external environment. In addition, this approach allows the IJC to consider danger to health and property by elements other than water, such as the atmosphere, which was not possible under the old, rather restricted guidelines.

115. Gum, Russell and Louise Arthur.  
1977 Information for policy: A new approach.  
AM ERS Forward Look, No. 43, 25 pages.  
U.S. Department of Agriculture, Economic Research  
Service.

This is a proposal for a computerized system of information provision for use when economic, social, and environmental aspects of policy decisions must be considered. Normative and positive data ("values" and "facts") are integrated in an information package. Properties of an efficient information package are described. The model is illustrated by an information system for the analysis of policy alternatives for predator control.

116. Krutilla, John V.  
1967 Conservation reconsidered.  
AM American Economic Review, Volume 57, Number 4,  
September 1967, pages 777-786.  
Also available as reprint from Resources for the  
Future, Inc., 1755 Massachusetts Avenue, N.W.,  
Washington, D.C. 20036.

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Recent studies suggest that the modern industrial economy will soon be virtually independent of the traditional natural resources sector and, therefore, it may no longer be necessary to carefully preserve these resources for future generations. However, this does not take into account the necessity to preserve the amenities associated with unspoiled natural environments and traditional market concepts do not make provision for this need. Therefore, the author attempts to develop criteria to be used when confronted by "a choice entailing action which will have an irreversible adverse consequence for rare phenomena of nature."

117. Mason, Edward S.  
1978 Natural resources and environmental restrictions  
AM to growth.  
Challenge, Institute of Economic Affairs, New  
York University, January-February 1978, pages  
14-20.

The author discusses the problems of economic growth and environmental protection. He says that although natural resources are not running out, it is still very important to strike a balance between economic growth and protection of the environment. He feels that, to adequately protect the environment, it will be necessary for government to play an increasing role in society and that the problems involved in environmental protection are not limited to any one single country. The effects of one country's action may be felt by another or by the world community.

118. McCormack, R. J.  
1972 Resource Use Conflicts in Canada, 8 pages.  
CAN Presented to the Canadian Pulp and Paper Association  
Seminar on Forest Environment, Lakehead University,  
Thunder Bay, Ontario P7B 5E1. May 1972.

This address to the Canadian Pulp and Paper Association concentrates on the issue of the conflict between those who want to protect and improve the environment at any cost and others who put development above environmental considerations. The author believes that if the pulp and paper industry is to settle its conflict with the environmentalists, it is essential to develop well-conceived policies and programs that will accommodate the two very divergent views and then communicate these to the concerned public. However, only by stopping the obvious pollution practices will the industry be able to convince the public of its sincerity.

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119. Sachs, Ignacy.

1977     Environment and Development - A New Rationale  
CAN     for Domestic Policy Formulation and Inter-  
         national Cooperation Strategies: Joint  
         Project on Environment and Development 2,  
         39 pages.

Prepared for the Policy Branch, Canadian International Development Agency and the Advanced Concepts Centre, Department of the Environment, Ottawa, Ontario.

This paper is one of a series of publications studying the linkage of "environment" with "development" and searching for an alternative type of development which stresses the environmentally sound use of resources. The author discusses the philosophical background of the concept of eco-development and how the development crisis has led to fears about continued economic growth. He sees the problem as being the need to find "the methods and uses of growth which make social progress and sound management of resources and environment compatible". He follows this with a discussion of how eco-development operates in different situations and how it contributes to international cooperation.

120. UNESCO.

1974     Programme on Man and the Biosphere (MAB). Task  
INT     Force on: The Contribution of the Social  
         Sciences to the MAB Programme, 40 pages.  
         Final Report.

Available from Canadian MAB Programme Secretariat, Liaison and Coordination Directorate, Department of Fisheries and the Environment, Ottawa, Ontario K1A 1C7. MAB Report Series No. 17.

The major objective of the MAB interdisciplinary program of research is "to develop the basis within the natural and social sciences for the rational use and conservation of the resources of the biosphere and for the improvement of the global relationship between man and the environment". At its second session, the Coordinating Council for MAB decided that a greater input of social science expertise was needed by its panels. The Social Sciences Department of UNESCO then convened a task force to clarify how the social science disciplines could contribute to the MAB program. This is the report of that task force. It evaluates the scope, form, and context of the contribution to the MAB program by the social sciences and draws up guidelines for future multi- and interdisciplinary cooperation.

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### Environmental Monitoring

121. Canada. Department of the Environment, Ottawa, Ontario.  
1978 Environment Source Book: A Guide to Environmental  
CAN Information in Canada, 115 pages.  
Enquiry Centre, Information Services Directorate,  
Department of the Environment, Ottawa, Ontario  
K1A 0H3. (Cat. No. En 21-23/1978.)

This is a guidebook to sources of information on the environment in Canada. Each federal and provincial government with jurisdiction in environmental and renewable resource management describes its responsibilities, also the principal legislation administered and key information sources and libraries. There are also summaries of the work of the important federal/provincial and international agencies and the federal/provincial advisory councils on the environment and a brief listing of citizens' groups active in Canada. Following this is a selective bibliography of current literature, details of environmental studies at Canadian universities and colleges, sources of information about environmental meetings and conferences, and a subject index.

122. Canada. Statistics Canada, Office of the Senior Advisor on  
1978 Integration, Ottawa, Ontario.  
CAN Human Activity and the Environment, March 1978,  
183 pages.

This is a compendium of statistical data concerning human activities that may produce stress in the natural environment. Much of the data has been previously published but the method of presentation here is designed to throw new light on the subject. The main chapter headings are as follows: I Watersheds, II Agriculture, III Forests, IV Fisheries, V Transportation, VI Manufacturing, VII Energy. Each chapter contains useful information, however, the first four would appear to be most relevant in the present context.

123. Friend, Anthony.  
1976 Indicators on the State of the Environment. Report  
CAN on the "State of the Art" in Canada, 16 pages.  
Prepared for the Conference on "Environmental Indicators,  
State of the Art in Industrialised Countries",  
International Institute for Environmental Studies,  
Berlin, December 1976.

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This paper discusses the state of the art of environmental monitoring in Canada. The first part concerns the growth of concern about the environment and the beginnings of environmental management. The author then discusses the growth of environmental monitoring and goes on to give a list of monitoring activity in Canada. The list explains the kind of information networks existing which relate to the collection of data on air, water, forests and wildlife. Finally, work in progress on indicators by Environment Canada, the Economic Council, and Statistics Canada is also discussed.

124. Friend, Anthony.

1977      Structured Framework for Environmental Statistics  
CAN      and Indicators on the State of the Environment,  
            25 pages.

Group of Experts on the State of the Environment,  
Environment Directorate, Organization for Economic  
Co-operation and Development, Paris, October 1977.

The purpose of this paper was "to contribute to national efforts in development of indicators and statistics on the state of the environment" and, in particular, to attempt to describe a means of integrating environmental statistics and indicators. The study was particularly concerned with the role of man-made stresses upon the environment and generates a framework that may be termed a "stress-response" model of the environment. The main feature of the framework is its concentration on "the 'interface' between the production-consumption activity of man and the transformation of the state of the environment".

125. Friend, Anthony.

1977      Frameworks for Environmental Statistics: Recent  
CAN      Experience of Statistics Canada, 19 pages.

Office of the Senior Advisor on Integration, Statistics  
Canada, Ottawa, December 1977.

Prepared for the Meeting on Environmental Statistics,  
January 1978: Statistical Commission and Economic  
Commission for Europe, Conference of European Statisticians.

This study was prepared by Statistics Canada and concerns two types of environmental statistical collection systems used by the Bureau. Part one describes the position of Statistics Canada with regard to the development of the "Material-Energy Balance Statistical

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System (MEBSS)" and also reviews an environmental information system, developed by the Bureau, from an ecological perspective. The second part describes a "Stress-Response Environmental Statistical System (S-RESS)". This was developed by Statistics Canada, however, it was further modified and refined by the author whilst he was a consultant with O.E.C.D..

126. MacKay, D. Robert and D. Glenn MacDonell.  
1975      Environmental Monitoring: A Compendium of Data  
CAN      Gathering Activities of Environment Canada,  
            44 pages.  
            Planning and Finance Service, Environment Canada,  
            Ottawa. Report No. 4. (Cat. No. En 36-509/4.)

This booklet describes the programs of data collection, carried out by Environment Canada, that are specifically related to environmental monitoring. The basic requisite necessary for inclusion in this publication was that the program be open-ended and that the data be collected continuously. The primary purpose was to produce a compendium of existing programs, undertaken by the department, concerning environmental monitoring.

127. Rapport, D. J.  
1977      Towards a Comprehensive Environmental Data System  
CAN      for Canada. II: Ecological Perspectives and the  
            Design of Environmental Information Systems, 49  
            pages.  
            Working paper prepared for the Interdepartmental  
            Committee on Environmental Statistics, Office of  
            the Senior Advisor on Integration, Statistics  
            Canada, August 1977.

This document proposes an environmental information system based on the division of the country into units (biomes) and sub-units (ecosystems). This division by natural region would replace the traditional use of air, land and water as a system of division. The purpose of the system is to collect information on major stress or stimulus factors which may affect a region and use this information to determine future policy.

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### Future Trends

See also items 110, 113, 119.

128. Canada. Science Council of Canada. Committee on the  
1977 Implications of a Conserver Society.  
CAN Canada as a Conserver Society: Resource Uncer-  
tainties and the Need for New Technologies,  
108 pages.  
Science Council of Canada Report No. 27.  
September 1977. (Supply and Services Canada  
Cat. No. SS22-1977/27).

This report discusses the implications for Canada of the necessity for Canadians to move towards a conserver society. It begins by examining the development of Canada and how this was based on the assumption of infinite resources and the necessity for changing this view. This is followed by a discussion of the policy developments necessary if Canadians are to become conserver-oriented. Finally, the Council gives its recommendations and suggests steps that may be taken immediately to help alleviate the situation and other, more long-term possibilities.

129. Chambers, Alan.  
CAN Toward a synthesis of mountains, people, and  
institutions, about 26 pages.  
Landscape Planning. Special Canadian issue.  
To be published.

After acting as mediator in two environmental issues faced by the British Columbia government, the author comes to certain conclusions concerning the problems faced by landscape planners. On the surface, these problems appear to be either ecological, e.g., "the decimation of fish populations by logging, agriculture, or industrial waste", or, socio-economic, e.g., "alienated, disenfranchised, low-income hinterland residents". However, the author concludes that these problems are, in fact, problems of human behaviour which are linked to a dichotomy existing between the structure of natural systems and the structure of society. Unless human behaviour can be adjusted, technological advances in the landscape planning process will remain of purely academic concern.

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130. Chappelle, Daniel E.  
1972 The Economics of Environmental Quality, 12 pages.  
AM Department of Natural Resources, Michigan State  
University, East Lansing, Michigan.  
Presented at Midwestern Forest Economists Meeting,  
Thessalon, Ontario, Canada, September 1972.  
Unpublished Conference Paper.

The author examines the role of the economist in solving problems concerning environmental quality. He defines "environment" as including both natural organisms and man-made structures, and says that until recently the natural sciences have dominated the field of environmental science. However, the feeling is growing that environmental problems are people problems and therefore social scientists should also participate. Although economics, as a science, concerns itself primarily with market transactions and most environmental problems are not usually considered in these terms, the author still feels that the economists' approach to problem-solving would be useful. Two areas that he considers to be of high priority for analysis by economists, and which have been ignored, are the areas of spatial analysis in relation to environmental quality, and the problems associated with the equitable distribution of environmental "bads".

131. Goldsmith, Edward.  
1977 The future of an affluent society: The case of  
CAN Canada.  
The Ecologist, Volume 7, Number 5, June 1977,  
pages 160-194.

Historically, long-term planning has been based on the projection of current socio-economic trends into the future. However, this no longer seems to be a viable procedure as many well-established trends (in agriculture, fishing, etc.) are suddenly being reversed and many basic attitudes to man's relationship with his environment, are also changing. The author examines the question of how these changes will effect Canada and Canadians. He concludes that Canada can no longer be seen as a "cornucopia" and that Canadians must begin to move towards a "Conservator Society" as the first step to the development of an "Ecological Society". The latter is defined as - "one in which political and economic activities are considerably reduced in scale, in which local self-sufficiency is encouraged, and mobility is radically reduced".

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132. McCallum, Bruce.

1977      Environmentally Appropriate Technology: Renewable  
CAN      Energy and Other Developing Technologies for a  
            Conservator Society in Canada, 155 pages.  
            Advanced Concepts Centre, Office of the Science  
            Advisor, Environment Canada, Ottawa, Ontario.  
            Report No. 15, Fourth Edition. April 1977.  
            (Cat. No. En 102-1/15). French version avail-  
            able.

This paper provides an overview of "environmentally appropriate technologies" being developed in Canada and how they may contribute to the movement toward a conservator society. It begins by discussing the evolution of the thought processes leading to the quest for alternative technologies. The rest of the paper is divided into two parts. The first part documents the current state of development of these technologies, particularly those that emphasize renewable energy. The second part suggests the means by which society could be restructured into an idealized technological order which would use these methods.

133. Pearce, Peter H.

1973      Economic growth: Bane or blessing.  
CAN      Papers and Proceedings, IUCN Twelfth Technical  
            Meeting, pages 163-178.  
            International Union for Conservation of Nature and  
            Natural Resources, Morges, Switzerland.

The author postulates the theory that, despite what many critics say, economic growth per se is not a bad thing. However, specific failures in the present economic system are causing environmental degradation. These failures result from deficiencies in economic organization and in institutions. If attitudes were to change, these problems could be resolved and there would be no necessity to retard economic growth.

134. Schwartz, Peter, Peter J. Teige, and Wills W. Harman.

1977      In search of tomorrow's crises.  
AM      The Futurist, October 1977, pages 269-278.

The authors, as members of a research team at SRI Inc., attempted to identify some societal problems that might become critical in the future, using 8 different techniques which they developed for the purpose of identification. The 8 problem search strategies are listed and defined, the trends that cause the problems are

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enumerated and problems without solutions are described. Parallels are drawn between medical diagnosis and the diagnosis of social problems. The authors note the areas for future development of procedures. The article is followed by a list of 41 long-term societal problems identified by researchers at SRI International's Center for the Study of Social Policy.

135. Sewell, W. R. Derrick and Harold D. Foster.  
1976      Images of Canadian Futures: The Role of Conservation  
CAN      and Renewable Energy, 143 pages.  
Office of the Science Advisor, Environment Canada,  
Ottawa, Report No. 13.  
Prepared for the Advanced Concepts Centre, Department  
of the Environment and the Energy Development Sector,  
Department of Energy, Mines and Resources.

In the spring of 1975 the Advanced Concepts Centre of Environment Canada had a small informal workshop on Renewable Energy Resource Development. The participants held widely divergent views on the subject, however, all were agreed on the need to press ahead with the development of renewable energy resources. Following the workshop the Advanced Concepts Centre and Energy, Mines and Resources sponsored a study by Dr. Derrick Sewell and Dr. Harold Foster. They were asked to develop two scenarios, one that considered how a high growth in energy demand in the next 25 years could be dealt with and how this would affect Canadian society. The second project was to develop a "conserving society" scenario for the same period. They were then asked to suggest policy approaches appropriate to the attainment of these two future scenarios.

136. Tait, Janice J.  
1975      Non-Renewable Resources - What Alternatives?, 9 pages.  
CAN      Planning and Finance Service, Environment Canada,  
Ottawa (Cat. No. En 36-515/3-1975). Occasional  
Paper No. 3.  
Presented at The Couchiching Conference, August 1974,  
sponsored by The Canadian Institute for Public Affairs.

If Canadians are to consider controlling development of non-renewable resources then they must take into account three variables: supply and demand, cost, and imagination. Because supplies are dwindling fast it has become necessary to control development and demand for scarce resources. The environmentalist movement points out that environmental protection

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must be counted as a cost in all resource development. However, the problem of acquiring an understanding and acceptance of the concept of the costs of development, not just by industry and government, but also by the public, is likely to be a long process. Finally, it will be necessary to change our behaviour if our situation is really to be improved, and to do this will require imaginative thinking and all Canadians must participate in the process.

137. Woodbridge, Roy M.  
1978 Natural Resources and the Debate over Economic Growth.  
CAN (Notes for a talk.)  
Energy, Mines and Resources Canada, 580 Booth St.,  
Ottawa, Ontario K1A 0E4. March 1978.

This article is concerned with the debate over economic growth and specifically the confrontation between the "pro-growthers" and the "anti-growthers" and the effects of the different philosophies on resource development and the environment. The author proposes a strategy for Canada of self-reliant development, by creating a broader core of domestic economic activity that is less directly affected by the operation of the international economic order. This would involve changes in lifestyles and expectations, which would naturally lead to a process of development that takes into account the total Canadian situation and not just economic growth in isolation.

### Other Related Items

- I. 101-137.
- II. 237.
- III. 304, 314, 315, 327, 330, 336, 338, 339, 341, 342, 344, 351.
- IV. —
- V. —
- VI. 603, 605, 606, 635, 636, 638, 639, 640.
- VII. 702, 707, 712, 717, 718, 720, 721.
- VIII. 809, 811.

## II. NATURAL RESOURCE PLANNING AND MANAGEMENT

The documents in this category are directly concerned with the social dimensions of the planning and management of natural resources. Most deal with renewable resources, with a heavy emphasis on water and forest management.

The first two sections concern policies for resource planning and management. The documents under Policy Analysis attempt to analyze existing arrangements, in the form of management policy, legislation, public attitudes, etc. Policy Development focuses on the formulation of new policy and discussions on how present policies and attitudes may be adapted.

The items under Social Science Perspectives attempt to introduce a different perspective into the resource management field, specifically that of the social scientist. The references in the Methodology section are concerned either with methods to be used in research on resource management, or, with specific techniques or models to be used by the resource professional. The final two sections consist of specific case studies and those documents that may be useful sources of information.

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### Policy Analysis

See also items 219, 228, 259.

201. Bennett, W. D., et al.  
1973 Essays on Aspects of Resource Policy: Background Study  
CAN for the Science Council of Canada, 113 pages.  
Science Council of Canada Special Study No. 27,  
(Information Canada Cat. No. SS21-1/27), May 1973.

The papers in this volume were prepared for the Science Council of Canada whilst it was engaged in a study of policy problems relating to Canada's renewable and non-renewable resources. They were written on different aspects of the problem to give the Council an overview of the situation and presented material which was not conveniently available elsewhere. Therefore, the Council decided to publish them as a series of background studies. The titles are as follows:

- W. D. Bennett. Science expenditures and the contributions of the resource industries to the Canadian economy.  
A. D. Chambers. The systems approach to resource allocation.  
A. R. Thompson and H. R. Eddy. Jurisdictional problems in natural resource management in Canada.  
A. J. Cordell. Resources: Implications of ownership.

202. Campbell, Richard S., Peter H. Pearse, and Anthony Scott.  
1972 Water allocation in British Columbia: An economic  
CAN assessment of public policy.  
University of British Columbia Law Review, Volume 7,  
Number 2, pages 247-292.

This study is primarily concerned with the water allocation system in British Columbia and its effectiveness in distributing the available resource amongst competing uses. It includes a discussion of the economic efficiency of the allocation of water resources, a description of the various instruments of public policy at both provincial and federal levels, and the administrative framework necessary for their implementation. Following this is an analysis of water rights and the use of water for waste discharge, and finally the authors evaluate the economic efficiency of the present policy framework.

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203. Campbell, Richard S., et al.  
1974 Water management in Ontario - an economic evaluation  
CAN of public policy.  
Osgoode Hall Law Journal, York University, Downsview, Ontario, Volume 12, Number 3, December 1974, pages 475-526.

There exists in Ontario a complex system of law and regulatory machinery for controlling water use and this study attempts to assess the efficiency of this system from an economic viewpoint. It examines the law and statutes governing the allocation of water resources and their use in waste disposal, and also the structure and procedures of the agencies administering these rules. The authors conclude that further research will show that an allocation system, recognizing the circumstances of different locations, although more costly to administer, would be justified. It would lead to more efficient use of water resulting in an increase in the economic and social value derived from this resource.

204. Canada. Department of the Environment, Fisheries and Marine Service.  
1976 Policy for Canada's Commercial Fisheries,  
CAN 100 pages, Ottawa, Ontario, May 1976.

The purpose of this study was to examine the problems faced by Canada's commercial fisheries and discover ways to solve these problems. The author then presents a plan for managing and developing this resource which will, hopefully, create a healthy and stable industry. The prime concern of this report is with the sea fisheries, however, most of the principles evolved may apply equally well to the freshwater fisheries.

205. Cooke, Karen.  
1978 The concept of social equity in coastal recreation.  
CAN Coastal Zone '78, Symposium on Technical, Environmental, Socioeconomic and Regulatory Aspects of Coastal Zone Management, Volume 1, pages 164-174.  
American Society of Civil Engineers, 345 East 47th Street, New York, N.Y. 10017.

This paper looks at existing public policy on the allocation of coastal recreation resources in B.C. and how it has developed. It concludes that so far the approach has been an ad hoc one with no long-term integrated planning principles involved. The result has been that the concept of social equity has often been left out of the planning process. As the coastal resources are

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a scarce commodity and user demand is growing, the author feels that, in future, the concept of social equity should receive as much consideration in the planning process as economic feasibility or environmental protection.

206. Erickson, D. L., H. K. Cordell, and A. C. Davis.  
1977 Public land policy: An evaluation of decision and  
AM citizen involvement systems.  
Journal of Environmental Management 5, pages 365-377.

This paper sets out to examine the existing government decision-making and public involvement procedures and identify problem areas. It proposes alternative solutions in the problem areas and evaluates these solutions. Four alternative decision-making and public involvement systems are presented on a scale from "best" to "worst", the "best" being the establishment of commissions to make decisions concerning the allocation and management of natural resources.

207. Fitzsimmons, Allan K.  
1976 National parks: The dilemma of development.  
AM Science, Volume 191, pages 440-444.

Because many of the early parks were developed in the days before the automobile was extensively used, the tendency became to locate park facilities close to scenic attractions. The result of this policy is that, today, the concentration of activity has become so great that it detracts from the scenic resources of the park. As transportation is no longer the problem that it was in earlier times, it seems logical that some facilities should be located at a greater distance from the principal scenic areas. Certainly, such non-compatible uses as employee housing and administrative support operations could be relocated to help prevent further scenic depreciation.

208. Great Lakes Basin Commission.  
1977 Great Lakes Basin Region Summary Report for the 1975  
AM National Assessment of Water and Related Land Resources,  
171 pages.  
Public Information Office, Great Lakes Basin Commission,  
3475 Plymouth Road, P.O. Box 999, Ann Arbor, Michigan  
48106.

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This study was conducted as part of the 1975 National Water Assessment, in order to identify resource-related problems and possible priorities in dealing with them. The Great Lakes Basin Commission staff worked with local residents in an effort to see how they perceived water-related problems. Other aspects examined were the questions of the adequacy of water supplies, conflicts of use, and legal, institutional, and financial constraints.

209. Hendee, John C.

1972 Management of wildlife for human benefits.  
AM Western Proceedings Fifty-second Annual Conference of  
the Western Association of State Game and Fish  
Commissioners, Portland, Oregon, pages 175-181.

The author discusses the necessity for a renewed emphasis, in wildlife management, on human benefits. He discusses the "game bagged" and "days afield" theories for measuring hunting benefits and finds them inadequate. Instead, he proposes a "benefits-to-people" philosophy based on the notion that better management of conditions and hunter-wildlife relationships could lead to increased benefits and satisfactions.

210. Hendee, John C.

1974 A scientist's views on some current wilderness management  
AM issues.  
Western Wildlands, Spring 1974, pages 27-32.

This article discusses the role of the resource professional in determining the use of wilderness areas and insuring their preservation. It also discusses the two opposing philosophies of wilderness management: the anthropocentric approach, which emphasizes the enhancing of man's use of the natural environment, and the biocentric or "pure" approach, which emphasizes the natural integrity of wilderness ecosystems.

211. Hendee, John C. and Richard L. Bury.

1971 Private timberland owners invite public, but does  
AM recreational development pay off?  
Western Conservation Journal, Volume XXVIII, Number 1,  
January-February 1971, pages 28-30.

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The authors are investigating whether recreational development by private corporations pays off. They point out the various economic factors, and direct and indirect benefits, which should be considered by industry in determining a recreational development policy. The article summarizes future economic profit expectations, and the direct and indirect costs and benefits that companies should consider in evaluating possible effects, both positive and negative.

212. Hendee, John C. and Robert C. Lucas.  
1973 Mandatory wilderness permits: A necessary management  
AM tool.  
Journal of Forestry, Volume 71, Number 4, April 1973,  
4 pages.

This article discusses wilderness management and ways of controlling the impact of users on the environment. It first of all looks at the visitor self-registration system, and then goes on to discuss the pros and cons of mandatory wilderness permits. The authors feel that the latter would readily gain user acceptance and would produce substantial benefits for both users and managers.

213. Lilley, Wayne.  
1978 Conserve or develop? Like Sir John A., we love our  
CAN national parks - particularly if there's a buck  
in it.  
The Canadian Magazine, weekend supplement to The Gazette  
(Montreal, Quebec), June 30/July 1 1978, pages 4-8.

Canada has, today, one of the biggest parks' systems in the world, with a total area of more than 50,000 square miles. However, the system is threatened by a growing number of problems, many arising from the original policy begun by John A. Macdonald when Banff was created, of expecting the parks to pay for themselves with their "inexhaustable" resources. It is in Banff, in particular, that these problems are now coming to a head as confrontations occur between the conservationists and the pro-development lobby. The problem has been further compounded by the frequent change of ministers heading Indian Affairs and Northern Development and their lack of concern with the parks' program.

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214. Muir, T.  
1975      Water Pollution Control and Economic Growth: One Policy,  
CAN      Two Objectives, 26 pages.  
Social Sciences Division, Inland Waters Directorate,  
Ontario Region, Canada Centre for Inland Waters,  
Environment Canada, Burlington, Ontario. Unpublished  
report. November 1975.

This study discusses the economic impact of a hypothetical program of water pollution control in Canada. In particular, it investigates how expenditure on such a program would affect output, employment and price levels, between 1975 and 1985. The conclusion is that, in fact, it would provide a stimulus to employment and economic growth with only a slight increase in prices.

215. Pearse, Peter H.  
1970      Conflicting objectives in forest policy: The case of  
CAN      British Columbia.  
The Forestry Chronicle, Volume 46, Number 4, August  
1970, 7 pages.

This paper is a critique of present policies and procedures in forest management. It examines 3 ethics which have influenced natural resource development in the West - conservationist, promoter, and technological. In B.C., specifically, with the Sloan Reports of 1945 and 1957, the technological school gained ascendancy. The author suggests technical criteria for resource management do not maximize the value of forest resources, because economic factors are neglected and secondary or tertiary uses cannot easily be accommodated. Social values are also not considered. To rationalize conflicting uses and to obtain maximum social and economic value, criteria other than technical must be developed to set the goals of forest policy.

216. P.E.I. Land Use Service Centre and the Maritime Resource Management  
1978      Service Council of Maritime Premiers.  
CAN      Non-Resident Land Ownership Legislation and Administration  
         in Prince Edward Island, 78 pages.  
Prepared for Lands Directorate, Environment Canada,  
Land Use in Canada Series, Number 12. (Supply and  
Services Canada Cat. No. En 73-1/12.) March 1978.

The 1972 amendment to the Prince Edward Island Real Property Act limited the amount of land that could be purchased by non-residents. This report is a study of how this amendment affected non-resident

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land ownership trends. The situation prior to the legislation is presented and data on the period between 1972 and 1976 is summarized and analyzed, to show developments and trends during that period. In the course of the study a complete land information system was developed that has become a model for other such systems in Canada.

217. Swan, Hedley.

1978      Federal Lands: Their Use and Management, 110 pages.  
CAN      Lands Directorate, Environment Canada, Ottawa.  
            Land Use in Canada Series, Number 11. (Supply and  
            Services Canada Cat. No. En 73-1/11). March 1978.

This document examines the effects of federal land management policy and explains the operation of the Treasury Board Advisory Committee on federal land management. Departments and agencies which are major land holders, or have policy responsibility for federal land, are examined and their land management practices reviewed.

### Policy Development

See also items 208, 209, 210, 212, 213, 241, 250, 252, 254, 260.

218. Batteke, J.P.H.

1976      A Simulation Model for Exploring Future Trends in Waste  
CAN      Loadings to the Upper Great Lakes, 36 pages.  
            Canada Centre for Inland Waters, Environment Canada,  
            unpublished report, November 1976.  
            Presented at the 4th Global Modelling Conference at  
            The International Institute for Applied Systems  
            Analysis, Laxenburg, Austria, September 1976.

This is a report on the application of systems modelling to the management of the international waters of the Great Lakes. The purpose of the exercise was to determine, quantitatively, possible future trends in waste loading and from the information gained to attempt to formulate plans and policies for both members of the International Joint Commission.

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219. Canada-British Columbia Consultative Board.  
1973 Canada-British Columbia Okanagan Basin Agreement.  
CAN Findings and Recommendations of The Consultative Board, 38 pages.  
Water Planning and Management Branch, Environmental Management, Fisheries and Environment Canada, Ottawa, Ontario K1A 0E7. Draft copy. Fall 1973.

These findings and recommendations of the Consultative Board arise out of a four-year study of water-resource management in the Okanagan Basin, with the objective of preparing a comprehensive framework plan for the development and management of water resources for the social and economic betterment of the Okanagan community, to the year 2020. This is a new approach to water management, combining the skills of many experts, information on health, wildlife, forestry and land use, and the education of and input from Okanagan Valley residents.

Of the three alternative projections of economic growth to 2020--continuation of present economic policies, high economic growth, low economic growth--citizen task forces unanimously chose the latter, and the recommendations are based on this premise.

Recommendations cover the following general areas: administration (implementation and monitoring), water quantity management, water quality management, conflicts in uses of water resources, management of recreational uses of shorelines and waters. The detailed recommendations for each of these general areas include cost-benefit analysis in some cases. Specific recommendations are made for particular communities and bodies of water in the Okanagan Valley.

220. Canada. Science Council of Canada. Committee on the Resources  
1973 Overview.  
CAN Natural Resource Policy Issues in Canada, 59 pages.  
Science Council of Canada Report No. 19, (Information Canada Cat. No. SS 22-1973/19), January 1973.

This report tries to identify a more objective method of allocating funds for scientific research, in an attempt to find more effective ways of using science and technology to develop and manage Canada's natural resources. If research efforts are to become efficient and not be unnecessarily duplicated, it will be necessary to develop lines of communication between institutions and between various levels of government, to encourage the free flow of information and ideas. The report makes a number of recommendations on how this can be achieved.

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221. Canadian Outdoor Recreation Research Committee.  
1975 The Economic Impact of Parks, 101 pages.  
CAN Ontario Research Council on Leisure, 77 Bloor Street  
West, 8th floor, Toronto, Ontario M7A 2R9.  
Prepared for the Federal/Provincial Parks Conference.

This report addresses itself to two questions: (1) What are the economic benefits of parks? (2) How can these benefits be measured? Chapter 1 delineates the problems and issues faced by program managers and planners. Chapters 2 and 3 discuss the methods available for measuring primary and secondary benefits and the problems in application of these methods. Chapter 4 gives guidelines for specifying and documenting the benefit-related estimates, and Chapter 5 gives an evaluation of benefits in a number of recent park and recreation developments. A case study of a proposed methodology for determining the secondary economic benefits of a park system, and a set of administrative guidelines for undertaking a socioeconomic impact analysis, are the topics of Chapters 6 and 7. Chapter 8 presents a number of methods for evaluating the social benefits of alternative developments. Finally, conclusions about the economic benefits of parks are outlined and recommendations related to the regional development objectives are listed.

222. Hendee, John C.  
1974 Forestry's response to increased demand for commodity  
AM and amenity values.  
Journal of Forestry, Volume 72, Number 12, December 1974,  
pages 771-774.

The author argues in favour of an increased emphasis on multiple use by forest managers, which would require more intensive management efforts. This would be achieved by public involvement, and consensus among forest clients as to the best mix of forest products, values, and uses. Once agreement on basic goals is reached, hopefully, the public will be able to obtain funds to implement those goals.

223. Hendee, John C. and Rabel J. Burdge.  
1974 The substitutability concept: Implications for recreation  
AM research and management.  
Journal of Leisure Research 6, Spring 1974, pages 157-162.

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Substitutability, as defined in this study, refers to the interchangeability of recreation activities in satisfying participants' motives, needs, and preferences. The authors identify some basic research questions about substitutability, and define management implications. They describe and illustrate some problems hampering research and application of the concepts to policy.

224. Institute for Water Resources.  
1977 Social Scientists Conference: Proceedings. Volume II:  
AM Flood Control Planning, 181 pages.  
U.S. Army Corps of Engineers, Fort Belvoir, Virginia  
22060. December 1977.

Volume II of the Social Scientists Conference places its emphasis on flood control planning. The 19 papers presented address themselves to the following aspects of the theme:

1. Reallocation of Operating Projects.
2. Agricultural Project Priority.
3. Damage Functions and Benefit Models.
4. Land Use Analysis.
5. Comprehensive Flood Plain Management.
6. Social Aspects of Flood Control Planning.
7. Research Needs.

225. Manthy, Robert S.  
1977 Scarcity, renewability, and forest policy.  
AM Journal of Forestry, Volume 75, Number 4, April 1977,  
5 pages.

Despite the belief that timber is a renewable resource and, as a result, not a scarce commodity, it is becoming apparent that sawlogs may be the only scarce major raw material in the United States. Therefore, it is suggested that attempts be made to restructure consumption patterns away from lumber, and to encourage the use of plywood, particle board, paper-based products, and other aggregate wood products.

226. Pearse, Peter H.  
1969 Principles for allocating wildlife among alternative  
CAN uses.  
Canadian Journal of Agricultural Economics, Volume XVII,  
Number 1, pages 121-131.

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This paper attempts to develop reliable criteria for allocating public lands to different uses and also to clarify the rather vague concept of "multiple use". Using economic criteria, the author defines the optimum use or uses of a particular resource base under different conditions. He works on the assumption that the ultimate objective is to put each parcel of land to that use yielding the greatest benefit to the people, as represented by the governmental decision-maker.

227.   Pearse, Peter H.  
      1970       Northern forest management: Ends and means.  
      CAN       The Forestry Chronicle, Volume 46, Number 3, June 1970, 4 pages.

To ensure efficient use of northern forest resources, economic criteria which respond to changing market conditions must be used; technical criteria are inadequate by themselves. A framework of public administration of forest resources, to stimulate efficient private use of northern forests in the public interest, must be developed. Present policies hinder effective market competition, especially in the north. The author suggests various policies which would be more responsive to the problems of forest management in the north and allow for competition.

228.   Priddle, George B., guest editor.  
      1978       Canadian wildland resources: The role and management  
      CAN       of wildlands as a natural resource.  
              Special Issue of Contact, Volume 10, Number 1, Spring  
              1978, 156 pages.  
              Graphic Services, University of Waterloo, Waterloo, Ontario.

This issue of Contact contains material presented at a Symposium on Wildlands organized by a group of graduate students from the Faculty of Environmental Studies at the University of Waterloo. The first part consists of the principal papers given at the Symposium and the solicited responses, and the second part consists of three original contributed papers that were considered complementary to the theme.

George Priddle. Introduction.

James S. Gardner. The meaning of wilderness: A problem of definition.

David Bates. Wildlands: Size, number, location and potential.

George Stankey. Response.

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Cameron Clark. Prescribing carrying capacity standards for wildland areas: Bridging the gap between policy and management.

Mark Cressman. Response.

Tom Lee. Wildland policy formation: The public, the politician, and the bureaucrat.

Harold Eidsvik. Response.

Robin Fraser. Response.

John Swaigen. Legal tools for protecting privately-owned wilderness areas.

George Priddle. The wilderness controversy in Ontario.

George R. Francis. A policy for remnant natural areas in the regional municipality of Waterloo.

Nancy Weeks and David A. Gauthier. Perspectives on wildland education.

229. Royal Commission on Forest Resources. Peter H. Pearse, Commissioner.  
1976 Timber Rights and Forest Policy in British Columbia.  
CAN Volume 1: Report of the Royal Commission on Forest Resources, Victoria, British Columbia, 395 pages.

This comprehensive report contains the findings and recommendations of the Royal Commission on Forest Resources for the Province of British Columbia. The Commission enquired into, and formulated recommendations for, the management, regulation and use of forest resources; matters regarding the disposition of rights by the Crown to harvest timber and occupy forested land in B.C.; and the protection of the public interest in the allocation and use of forest resources. The data gathered by the Commission can be found in Volume 2 of the Report (see item 230).

230. Royal Commission on Forest Resources. Peter H. Pearse, Commissioner.  
1976 Timber Rights and Forest Policy in British Columbia.  
CAN Volume 2: Report of the Royal Commission on Forest Resources, Victoria, British Columbia.

Volume 2 of the Royal Commission Report consists of the appendices to Volume 1, containing data on the following topics, gathered by the Commission in its study:

- A. Evolution of Forest Tenure Policy.
- B. Structure and Dimensions of the British Columbia Forest Industry.
- C. Taxation of Forest Land.

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- D. Regulating the Harvest Rate.
- E. Restrictions on Exports of Logs and Chips.
- F. A Note on the Public Hearings.
- G. Participants and Exhibits at the Public Hearings.

231. Sadler, Barry.

1978      Forest Recreation in Alberta. A Supplementary Bulletin  
CAN      to the Public Hearings on Environmental Effects of  
            Forestry Operations in Alberta, 99 pages.  
            Environment Council of Alberta, 2100 College Plaza  
            Tower 3, 8215-112 Street, Edmonton, Alberta T6G 2M4.  
            Information Bulletin Number 11.

This bulletin examines the recreational use of provincial forests in Alberta and is divided into three sections. Section I looks at the "Patterns of Use and Demand in Forest Recreation". It examines the present pattern of use and then goes on to discuss future demands. The conclusion reached is that future demand, plus present pressures, provide the basis for some kind of action which will, of necessity, be shaped by supply. Section II looks at "The Recreational Resources of the Provincial Forests" and provides an inventory of the supply of recreation resources, found in forest lands, and their capabilities for various types of recreation. Section III, "The Interaction Between Demand and Supply: Implications for Management", examines the impact of recreation demand on forest resources, new policies in resource management, and some of the outstanding issues in forest recreation.

232. Sewell, W. R. Derrick.

1973      Climate and weather control.  
CAN      Annals of the New York Academy of Sciences, Volume 216,  
            May 18 1973, pages 30-41.

This paper presents a résumé of the development of climate and weather modification techniques. It concludes that there are still many questions that remain to be answered regarding the social desirability of these programs. In particular these relate to: "(i) the specification of liability for damages caused by weather modification; (ii) the resolution of disputes among states or nations; (iii) the lack of an agency at the federal level for formulating and coordinating national policy in this field; (iv) the lack of an independent means for assessing the social desirability (as opposed to the technical feasibility) of the technology on a continuous basis". The author feels that it may require a major disaster, caused by a weather modification program, before any action is taken.

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233. Sewell, W. R. Derrick.  
1973 Broadening the approach to evaluation in resources  
CAN management decision-making.  
Journal of Environmental Management 1, pages 33-60.

The author argues that the need for better methods of project and policy evaluation has been emphasized by growing demands on the public purse, more and more conflicts in resource use, and increasing protests about environmental degradation. It is becoming increasingly obvious that deficiencies in certain areas of knowledge have led to inadequate evaluations. As the research priorities are now clear, the author feels that all that is required is to find capable researchers, and the financial support necessary to begin to develop new methods of evaluation.

234. Sewell, W. R. Derrick.  
1978 Water resources planning and its future societal context.  
CAN Water Supply and Management, Pergamon Press, Volume 1,  
pages 387-397.

This article argues that, traditionally, water resource planners have failed to take into account changes taking place in society when they make plans. If the challenges of the next 25 years are to be met, it is essential that planners become more forward-looking and develop and improve their planning techniques. In particular, they will need to respond to the changing societal context of needs, technology, and institutions.

235. Sewell, W. R. Derrick and J. Elizabeth McMeiken.  
1967 Emerging problems in the management of atmospheric resources  
CAN in Canada.  
Atmosphere, The Canadian Meteorological Society, Volume 5,  
Number 4, pages 34-38.

This paper discusses the need for a new and comprehensive approach to the management of atmospheric resources. This has been emphasized by the growth of three quite recent phenomena. The first, the use of the atmosphere for waste disposal, is becoming increasingly costly, both in terms of lost man-hours and in pollution-related property damage. The second factor, the rising toll of losses due to severe weather events (floods, storms, etc.), added to the cost of normal weather conditions, is requiring large sums of money annually. Thirdly, the increasing acceptance of weather modification techniques, particularly in the U.S., may lead to spillover effects for Canada.

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236. Thames, John L., editor.  
1977 Reclamation and Use of Disturbed Land in the Southwest,  
AM 362 pages.  
The University of Arizona Press, Tucson, Arizona.

Of the thirty-three papers in this collection, about ten deal directly with social dimensions of reclamation and use of disturbed land, and several others devote some attention to the human factor. Among the subjects covered are: land use planning and the mining industry, legislative changes in reclamation, public preferences for scenic quality, amenity costs and conflicts, public reactions and attitudes to resource extraction (mining, in particular), and conflicts between uses and users. The volume was designed to help those involved in the planning, operation, use and management of reclamation efforts in the arid and semiarid system. Constraints, alternatives, techniques, and the latest results of major research efforts in disturbed land reclamation in the southwest are described. The problems of industry, government, and conservationists are also presented.

237. Woodbridge, Roy and Josef Lajzerowicz.  
1977 Minerals and the Environment: Current Problems and  
CAN Policies, 47 pages.  
Energy, Mines and Resources Canada, Ottawa, Ontario, Mineral Policy Series, Mineral Bulletin MR 163, March 1977.

This publication attempts to identify the main policy considerations that Canada's mineral industry must take into account, if it is to remain economically viable and also protect the carrying capacity of the natural environment. Chapters 1 to 3 attempt to assess the costs and benefits involved in applying environmental protection measures to the industry. Chapter 4 gives the arguments for and against a program of mineral conservation and emphasizes the virtual necessity for a change in the life-style of Canadians, if environmental protection measures are put into effect. Chapter 5 concerns itself with the management problems related to the "minerals/environment interface".

### Social Science Perspectives

See also item 224.

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238. Batteke, J. P. H.  
1975 The Watershed as a Management Concept, 13 pages.  
CAN Social Sciences Division, Canada Centre for Inland  
Waters, Environment Canada, Burlington, Ontario.  
March 1975.  
Presented at the Symposium on the Integrity of Water  
sponsored by the U.S. Environmental Protection  
Agency, Office of Water and Hazardous Materials.

This paper was presented at the Symposium on the Integrity of Water and focuses on water uses and their functions and relationships. Water in the watershed, as opposed to water within the boundaries of a river or lake, plays a vital part in all the activities taking place in that region. It affects not only the flora and fauna, but also human activities which, in their turn, also have an effect on the water system. Obviously the management of such an interconnected system becomes a multidisciplinary problem. Because it is so complex and in order to achieve a comprehensive understanding, the author suggests that computerized simulation models are an essential tool in the management process.

239. Butler, R. W.  
1977 The Social Impact of Tourism, 8 pages.  
CAN Department of Geography, University of Western Ontario,  
London, Ontario N6A 5C2

This brief paper reviews the impacts of tourism on resources, economic well-being, life-styles, and social benefits in "indigenous" populations. The paper indicates "that the impact of tourism and recreation is much more complex in nature than many writers have indicated." That complexity lies chiefly in the impact on life-styles and quality of life, a dimension of tourism research largely unexplored. The author suggests the research requirements necessary to identify significant social changes associated with tourism and to ultimately assist in the establishment of required safeguards.

240. Chappelle, Daniel E.  
1973 The need for outdoor recreation: An economic conundrum?  
AM Journal of Leisure Research 5, Fall 1973, pages 47-53.

The author submits that recreation professionals tend to believe that recreation is a genuine human need as opposed to a desire. This belief is the root cause of many difficulties encountered in adequately defining problems in applied recreation research. He elucidates the resulting economic implications of such a belief, the feedback effects, the "requirements approach", equity considerations, emphasis on rural orientation, and the resulting lack of critical sense, arising from the tendency of the recreation profession to be "true believers".

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241. Clark, Roger N.  
1974 Social science, social scientists, and wildlife management.  
AM Transactions of the Thirty-eighth Federal-Provincial  
Wildlife Conference, pages 103-107.  
Canadian Wildlife Service, Ottawa, Ontario.

This article, by a social scientist, discusses the problems involved in incorporating social science methods and concepts into the wildlife planning and management process. The author feels that the real problem lies at the interface between the two disciplines and that once the barriers to effective communication between them have been overcome, both disciplines, as well as the general public, will benefit from the results.

242. Institute for Water Resources.  
1977 Social Scientists Conference: Proceedings. Volume I:  
AM Social Aspects of Comprehensive Planning, 286 pages.  
U.S. Army Corps of Engineers, Fort Belvoir, Virginia,  
22060. December 1977.

This is the first of 3 volumes of the proceedings of a conference held by the Institute for Water Resources of the U.S. Army Corps of Engineers, the aim of which was to discuss the role of the social scientist in the planning of natural resources. This volume concentrates on the various dimensions of social input into the planning process and groups the 30 papers under the following headings:

Social Science in the Corps of Engineers Planning.

Social Aspects of Comprehensive Planning.

The Social Science Perspective.

The Regional Well-being Account in Water Resources Planning.

243. Manthy, Robert S.  
1975 Social sciences future in forestry.  
AM Proceedings of the Society of American Foresters, Annual  
Meeting, Washington, D.C., 8 pages.

The social sciences are concerned with people and with social welfare, and not with biological principles. Therefore, the social scientist can contribute an invaluable perspective to the forest manager that otherwise might be overlooked. As society's beliefs and values regarding the use of the forest environment are changing, it is essential that the forester should recognize this and adjust his thinking accordingly.

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244. Priscoli, Jerry Delli.  
1977 Integrating social analysis into water resources planning:  
AM Some emerging trends in the Corps of Engineers.  
Water Resources Bulletin, American Water Resources  
Association, Volume 13, Number 5, October 1977,  
pages 953-958.

Although legislation exists requiring social analysis in water resource planning, at present no workable formula exists for ensuring its inclusion in the process. The article examines the two main problems faced when trying to integrate social theory and practical planning policy. These are: the trade-offs necessary between academic theory and political acceptability, and the problem of the management of social analysis in the planning process. These can be overcome by ensuring that social analysts provide specific, practical responses to questions, and become well enough integrated into a team to be able to have the same perceptions of the key planning problems as the other members of that team.

245. Sewell, W. R. Derrick.  
1975 Social Sciences and Resources Management in Canada: The  
CAN Need for Vision, 50 pages.  
Department of Geography, University of Victoria, Victoria,  
British Columbia, November 1975.  
Prepared for presentation at National Social Science  
Conference '75 on Social Science and Public Policy  
in Canada, Ottawa, Ontario.

Because of their physical orientation, resource management agencies are increasingly limited in their capacity to meet changing social needs. This weakness is also apparent in the orientation of technological development. This paper discusses the role of social science research in Canadian resource management. It makes some suggestions about the kind of topics that ought to be emphasized in future research and, in particular, in the research that relates to resource management.

### Methodologies

See also items 218, 221, 224, 255.

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246. Canada. Indian and Northern Affairs, Parks Canada, National  
1970 Historic Parks Branch.  
CAN The Economic Impact of National Parks in Canada: A  
Summary, Ottawa, Ontario, 82 pages.

A consulting firm was hired by the National and Historic Parks Branch of Indian and Northern Affairs to do an economic evaluation of potential park areas. The final report contains a review of the state of the art and develops a methodology for assessing economic impact, which was tested on the Gros Morne Park proposal. The original report is in two volumes and is here presented in summarized form.

247. Canada/MAB. The Canadian Committee for MAB and The Interdepart-  
1974 mental Committee for MAB.  
CAN Sub-program on Agriculture and Forestry: Provisional  
Framework. Report 3, 11 pages.  
Canadian MAB Programme Secretariat, Liaison and  
Coordination Directorate, Department of the Environ-  
ment, Ottawa, Ontario K1A 0H3. Bilingual.

This report sets out a provisional framework for the MAB Working Group on Agriculture and Forestry. It discusses research in agriculture and forestry in the Canadian context, and defines the research and special education objectives of the MAB Working Group. Finally it sets out criteria for research program selection and the strategy of the Working Group.

248. Chappelle, Daniel E.  
1971  
AM Modeling Resource Management and Allocation Forestry  
Systems Involving Non-priced Goods and Services to  
Improve Decision-Making, 7 pages.  
Department of Resource Development, Michigan State  
University, East Lansing, Michigan, August 1971.  
Paper presented to AAEE Annual Meeting, Carbondale,  
Illinois.

Chappelle questions whether economic models are the best starting point for an analysis of public policy issues, in particular for non-timber goods and services of the forests. He proposes that specific disciplinary models (e.g., "economic" models) do not meet needs, but that multidisciplinary models do. He outlines approaches, requirements, and complexities of this type of model-building, noting the reasons why efforts of this magnitude may not be possible at this time.

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249. Chappelle, Daniel E.  
1971 Quantitative Analysis in a Qualitative World: Modeling  
AM Forestry Systems to Improve Decision-Making, 20 pages.  
Department of Resource Development, Michigan State  
University, East Lansing, Michigan, September 1971.  
Paper presented at Society of American Foresters National  
Convention, Cleveland, Ohio.

The problems inherent in quantifying data in the human side of natural resources, for the purpose of responsible decision-making, are discussed and explored. The author explains how computing systems can be used to analyze data that is more qualitative than quantitative, where measurement on the nominal and ordinal scales is common. He believes that models containing a broad range of management alternatives, rather than those that are easily quantified, are essential. To achieve the kind of comprehensive planning that he advocates, further advances in computing systems technology may be necessary. However, the principal barrier is more one of non-adaptive behaviour on the part of managers and institutions than the need for new technology.

250. Chappelle, Daniel E., M. Mang, and R. C. Milley.  
1976 Evaluation of Timber RAM as a forest management planning  
AM model.  
Journal of Forestry, Volume 74, Number 5, May 1976,  
6 pages.

This report examines and evaluates the usefulness of Timber RAM in multi-resource comprehensive forest management planning. Both the limitations and assets are discussed for this computerized method, with the authors concluding that, while Timber RAM is a valuable algorithm for timber land scheduling, it is lacking application to forest management plans.

251. Domoy, Francis M. and Daniel E. Chappelle.  
1978 A Method for Selecting a Public Campground Site to Achieve  
AM Community Objectives, 27 pages.  
Agricultural Experiment Station, Michigan State University,  
East Lansing, Michigan, Research Report 345, February  
1978.

The purpose of this research is to provide the decision-maker with a planning tool which will allow him to: (1) inventory land and water resource characteristics; (2) establish community priorities

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as objective functions; and (3) select sites which match community objectives with available resource characteristics. The primary objective is to develop a land-use selection model for outdoor recreational planning for the decision-makers. The resulting information inventory system model is explained and developed in detail, with a conclusion listing its strengths and weaknesses, and recommendations for further research.

252. Gibbons, M. and R. Voyer.  
1974      A Technology Assessment System: A Case Study of East  
CAN      Coast Offshore Petroleum Exploration, 114 pages.  
Available from Information Canada, Ottawa, Ontario.  
Science Council of Canada Background Study Number 30,  
(Cat. No. SS 21-1/30). March 1974.

The objective and purpose of technology assessment is to evaluate the consequences of technological change and supply information to decision-makers in such a way as to aid them in the control of these changes. The task of the Science Council should be to "scan" the environment for technological opportunities and dangers and, after preliminary assessment, to recommend the establishment of a commission or task force. Part 2 of the report is a case study of offshore petroleum development, showing the kind of preliminary analyses that need to be done. Part 3 analyzes the effectiveness of the technology assessment system and gives a methodology for the analyst.

253. Institute for Water Resources.  
1977      Social Scientists Conference: Proceedings. Volume III.  
AM      Water Transportation Planning, 246 pages.  
U.S. Army Corps of Engineers, Fort Belvoir, Virginia  
22060. December 1977.

This is the third volume of the Corps of Engineers' Social Scientists Conference and it deals with all aspects of water transportation planning. The 25 papers are grouped under the following headings:

- Part A: Project Formulation and Benefit Estimation  
Methodology.
- Part B: Social Impacts of Water Transportation Projects.
- Part C: Modal Choice and Modal Impacts.
- Part D: Methodology for Waterborne Commerce Projections  
and Fleet Composition.
- Part E: Data Needs for Water Transportation Planning.

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254. Wagner, Thomas P. and Leonard Ortolano.  
1976 Testing an Iterative, Open Process for Water Resources  
AM Planning, 66 pages.  
Prepared for Institute for Water Resources, U.S. Army  
Engineer, Fort Belvoir, Virginia 22060. (IWR Contract  
Report 76-2). December 1976.

The IOPP was a study formula used by the Corps of Engineers and the San Francisco District Planners to evaluate alternative solutions to the flooding problems in the San Pedro Creek, California river basin. The IOPP is a process in which the traditional planning activities (i.e. problem identification, formulation of alternatives, impact assessment, and evaluation) are carried out concurrently, and the information gained "feeds" back to the problem identification task. One of the fundamental characteristics of IOPP is its recognition of the fact that all four planning activities are inter-dependent.

255. Webster, Henry H. and Daniel E. Chappelle.  
1975 Protecting Forest and Recreation Resources of the North  
AM Central Region from Unplanned Settlement Impacts:  
A Research Program, 19 pages.  
Department of Resource Development, Michigan State  
University, East Lansing, Michigan 48824. June 1975.  
Prepared for the annual meeting of the Mid-Continent  
Section, Regional Science Association, Duluth, Minnesota.

This is a description of a research program which will attempt to systematically and effectively consider ways to protect the forest from unplanned settlement impacts. The purposes are: (1) to develop analytical models and information inputs for more effective resolution of the problems; (2) organizational and legal designs to complement the measures. This proposal identifies the following components of the research programs: a) directing, staffing, funding for the program; b) identification of clientele; c) study regions to be used; d) expected results; and, e) concluding observations.

### Case Studies

See also items 205, 216, 221, 245, 251, 253.

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256. Badger, Daniel D., Dean F. Schreiner, and Ronald W. Presley.  
1977 Analysis of Expenditures for Outdoor Recreation at the  
AM McClellan-Kerr Arkansas River Navigation System,  
146 pages.  
Prepared for U.S. Army Engineer, Institute for Water  
Resources, (IWR Contract Report 77-4), December 1977.  
Available from National Technical Information Service,  
U.S. Department of Commerce, Springfield, Virginia  
22060.

This study is an analysis of expenditures for outdoor recreation in the indicated area. The objectives are: (1) to estimate the consumption expenditures for outdoor recreation in the study area; (2) to estimate the investment or capital expenditures for recreational equipment; (3) to estimate a trade flow matrix for the three Bureau of Economic Analysis regions; (4) to propose the methodology for estimating trade flows in the industry for the 44 region model. The study includes an extensive number of tables, containing visitation data, preference data and data on spending patterns.

257. Great Lakes Basin Commission.  
1977 Executive Summary: Great Lakes Basin Framework Study,  
AM 31 pages.  
Public Information Office, Great Lakes Basin Commission,  
3475 Plymouth Road, P.O. Box 999, Ann Arbor, Michigan  
48106.

The Great Lakes Basin Framework Study was carried out by the Great Lakes Basin Commission. It was a complete survey of the water and land resources of the basin and their uses, of existing problems and their possible solutions, and of projected future needs. The executive summary sets out the problems identified and the study recommendations, with a discussion of the latter, and the difficulties involved with implementation and future planning.

258. L. J. D'Amore & Associates Ltd., 3680 Mountain St., Montreal, Quebec.  
1975 Social, Institutional and Technological Trends and  
CAN Synergisms Affecting Water Resources Quality in the  
Canadian Portion of the Great Lakes Basin, 71 pages.  
Prepared for Social Sciences Division, Inland Waters  
Directorate, Ontario Region, Environment Canada,  
Burlington, Ontario

## II. NATURAL RESOURCE PLANNING AND MANAGEMENT

The purpose of this study was to provide a knowledge base to support the development of the Waste Loading Trends Simulation Model and also the land-use forecast model. It attempts to provide a description of the social, institutional, and technological factors likely to affect Great Lakes water quality in the future, by use of a comprehensive literature review and a modified Delphi survey. (These are bound as a separate appendix; see item 259). The knowledge base thus gained was then used to present a number of scenarios on relevant topics, and a final, integrated, and complete scenario. On the basis of the integrated scenario, quantitative definitions of the simulation variables of the waste loading model were prepared.

259. L. J. D'Amore & Associates Ltd., 3680 Mountain Street, Montreal,  
1975 Quebec.  
CAN The Knowledge Base: Appendix to the Report Entitled  
"Social, Institutional and Technological Trends and  
Synergisms Affecting Water Resources Quality in the  
Canadian Portion of the Great Lakes Basin", 180 pages.  
Prepared for Social Sciences Division, Inland Waters  
Directorate, Ontario Region, Environment Canada,  
Burlington, Ontario. Unpublished report. July 1975.

This report was prepared for the Ontario Inland Waters Directorate in an attempt to provide a base of information to aid in identifying trends affecting water quality development in the Great Lakes. This was done by conducting a literature search, which is presented as Part II of this appendix, and also by using a modified Delphi survey. The latter was undertaken in an attempt to be more context-specific, and to acquire a knowledge base more directly related to trends in water management and effluent production from municipal and industrial sources. The questionnaire was given to a panel of experts and is presented in the first half of the appendix, followed by the responses and an analysis of the results.

260. Manning, E. W. and S. Eddy.  
1978 The Agricultural Land Reserves of British Columbia:  
CAN An Impact Analysis, 145 pages.  
Lands Directorate, Environment Canada, Ottawa, Ontario.  
Preliminary Draft. July 1978. To be published.

The B.C. Agricultural Land Reserves were set up in an attempt to prevent scarce agricultural land from being removed from agricultural use. This paper is the report on the findings of a research program conducted by the Department of the Environment. They studied the impact of the legislation on the preservation of agricultural land and on the maintenance of existing farm enterprises. Twelve areas

## II. NATURAL RESOURCE PLANNING AND MANAGEMENT

were chosen for study by the researchers and the use and users of all 12 areas were surveyed. The changes in land tenure between 1972 and 1977 were analyzed, together with the opinions of the legislation, held by the property owners in the areas. The legislation's effect on the land market in B.C. was also examined. The report concludes that the ALRs have been effective and are generally well accepted in the province and that they are worthy of being used as a model in other parts of Canada. There are a number of appendices including the relevant legislation, questionnaires used and some of the data obtained. (See also item 261.)

261. Rawson, Mary.

1976 Ill Fares the Land: Land-Use Management at the Urban/  
CAN Rural/Resource Edges: The British Columbia Land  
Commission, 45 pages.  
Published by The Macmillan Company of Canada Limited  
for the Ministry of State for Urban Affairs, Urban  
Prospects Series.  
Information Canada Cat. No. SU 32-3/1976-12F. French  
version available.

This booklet, written by a full-time member of the British Columbia Land Commission, documents the attempts by the B.C. government to preserve fast-disappearing agricultural land. The Land Commission was set up in May 1973 to establish and administer an agricultural zoning law for the province and develop recommendations to aid in the preservation of farming and farm lands. Regional districts were asked to prepare "Agricultural Land Reserve Plans", based on the Canada Land Inventory (CLI) ratings, which had then to be approved by the Commission and the boundaries verified. The Commission is now well established and, more importantly, the need for control is recognized and accepted. It is possible that other provinces may be able to learn from the action taken by the B.C. government when facing problems of urban encroachment. (See also item 260.)

### Information Sources

See also item 217.

262. Canada. Fisheries and Environment Canada.

1976 Canada Water Year Book 1976.  
CAN Supply and Services Canada Cat. No. En 36-425/1976.

## II. NATURAL RESOURCE PLANNING AND MANAGEMENT

The 1976 edition of the Canada Water Year Book has a specific theme, "Water Resource Planning and Management in Canada", and subsequent editions will have a similar format. This edition limits itself to federal-provincial shared programs and groups the information into the following categories:

Water Resource Planning and Management.

Water Use and Development.

Floods and Flood Control.

Water Research in Canada.

263. U.S. Department of Commerce, National Oceanic and Atmospheric  
1976 Administration, Great Lakes Environmental Laboratory.  
CAN/ 1976 Great Lakes Directory of Universities, Research  
AM Institutes, and Agencies concerned with Water and Land  
Resources in the Great Lakes Basin, 66 pages.  
Great Lakes Basin Commission, Public Information Office,  
P. O. Box 999, Ann Arbor, Michigan 48106. March 1976.  
Prepared for The Interagency Committee on Marine Sciences  
and Engineering, Federal Council for Science and  
Technology.

The Directory contains "information on the institutions and agencies concerned with the water and related land resources of the Great Lakes Basin". The first part is entitled Alphabetical Listings and contains:

- 1) A Directory of Great Lakes Agencies.
- 2) A Directory of Universities and Research Institutes  
(in Canada and the United States).
- 3) A Directory of Libraries (in Canada and the United States).

The second part is Agency Descriptions and includes:

- 1) International (Canada/U.S.) Agencies.
- 2) Canadian Agencies.
- 3) United States Agencies.

## II. NATURAL RESOURCE PLANNING AND MANAGEMENT

### Other Related Items

- I. 101, 103, 104, 106, 109-112, 114-118, 121-123, 126-129, 131, 132, 136, 137.
- II. 201-263.
- III. 304, 311, 313, 314, 317, 319, 325-329, 332-334, 340, 345-350, 353-356.
- IV. 401-407, 409, 411, 412, 414.
- V. 504, 508, 509, 511-525, 527.
- VI. 601-603, 606, 609, 610, 612-619, 622-624, 626-637, 639, 641-643.
- VII. 702, 703, 706, 710, 713-716, 720, 722, 726, 727, 731, 732.
- VIII. 801, 805, 806, 809, 810, 812, 813.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

References in this category confirm that SIA is a growing, although young, aspect of social planning. The literature reflects a great deal of questioning and searching for conceptual frameworks, refined methodologies, and evaluations of actual SIA experiences. Accordingly, the sections of this category dealing with design of studies, methods of conducting them, and actual case studies are relatively well developed. Material which helps to orient or introduce the reader to the field of SIA and which takes stock of SIA's stage of development and "state of the art" is less substantial but frequently comprehensive. In view of SIA's evolution, it is not surprising that little information has come forth regarding policy development related to SIA.

A good deal of the literature appears to emanate from the U.S. experience with SIA. Readers will find, then, an American context for much of the material, whether specific case studies, new policies, or methods. The accomplishments, problems, and techniques, however, are clearly adaptable to Canada and provide a valuable basis for evolving our own field of experience.

One area in Canada where there has been considerable experience with impact assessment is in the development of the North. Several comprehensive studies, principally in the form of Inquiries, have been conducted. As these studies have a specific orientation to the North and often include, rather than focus on, SIA, they are listed and annotated within the Northern Development category (V) of the bibliography.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

#### Introducing SIA

See also items 309, 314, 317, 340.

301. Boothroyd, Peter.

1978 Issues in social impact assessment.

CAN Plan Canada, June 1978, pages 118-134.

"The purpose of this article is to identify some of the more troublesome conceptual issues involved in social impact assessment (SIA), and to offer suggestions for resolving these issues. The article is divided into two major parts. The first deals with issues in the definition of the term 'social impact assessment'. The second part deals with issues in the evolution, role, and future of SIA."

The article is thorough in its treatment of sources of confusion, problems, sensitivities, and issues in the identification of impacts and undertaking of SIA studies.

302. D'Amore, Louis J.

1978 An executive guide to social impact assessment.

CAN The Business Quarterly, Summer 1978, pages 35-44.

This article considers several dimensions of SIA and places it in the context of use in and by the business sector. From a general definition of SIA, the author goes on to describe SIA's evolution in terms of societal trends and legislation. The current state of the art is then outlined, considering concepts and methodologies. The practice of SIA is also placed in the context of the "community ecology" and the dynamics there that must be accounted for in SIA design. Finally, the author considers the sensitive issues involved in the "proponent-community-consultant" relationship.

303. Jobes, Patrick C.

1976 Practical problems facing sociologists preparing  
AM environmental impact statements.

Social Impact Assessment 8, August 1976, pages 12-19.

The article describes the problems faced by sociologists participating in the preparation of environmental impact statements. The problems result principally from the milieu within which impact assessments are undertaken, and from methodological inadequacies of environmental sociology. Contributing to these problem areas

### III. SOCIAL IMPACT ASSESSMENT (SIA)

are specific issues which the author points out and describes. These include interdisciplinary "predicaments", time and budget restraints, and the organizational context of research. Other dilemmas associated with morality and/or personal values conflicts are also discussed.

304. Sills, David L.  
1976 Social science research and the formation of energy  
AM policy.  
Social Impact Assessment 5, May 1976, pages 5-10.

The article is a statement prepared for submission to the National Research Council's Committee on Nuclear Power and Alternative Energy Systems. The author argues the case for SIA and specifically "Social Science Research" in the development of a rational energy policy. His rationale is organized according to the key study areas seen as requirements: Institutional Studies (e.g., energy decision-making), International Studies (e.g., international controls), Historical Studies (e.g., search for precedents) and, Public Acceptance Studies (e.g., public attitudes). Descriptions of the need for each are provided.

305. Wolf, C. P.  
n.d. Socially Oriented Impact Assessment, 7 pages.  
(c. 1976) c/o Bruce Hutchings, Department of Architecture,  
AM 104 Architecture Building, University of Illinois,  
Urbana, Illinois 16801.

The paper argues the case for the "human dimension" in environmental impact assessment and introduces SIA as the means to overcome the perceived current defect. A rationale for SIA and the "social orientation" of the National Environmental Policy Act (NEPA) are outlined as an orientation to SIA. Definitions and mandates for SIA as currently organized within the NEPA framework are then detailed. The article ends with a brief summary statement on the available state of the art methodology of SIA.

306. Wolf, C. P.  
1977 Social impact assessment: The state of the art updated.  
AM Social Impact Assessment 20, August 1977, pages 3-22.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

The article accomplishes an orientation to SIA through a state of the art review. SIA's concepts, central meaning and definitions are described, as well as its history and evolution. In so doing, the author weaves in SIA-related issues, appraisals of the state of the art and legislative contexts. Wolf also sets out the SIA "system", identifying components which will all have an interest in the assessment - for example, government, corporate. Issues and requirements vis-à-vis public involvement in SIA are put forward, as well as requirements of the professional to act effectively in SIA.

#### State of the Art

See also items 306, 316, 318, 324, 332, 340.

307. Boothroyd, Peter.  
1975 Review of the State of the Art of Social Impact  
CAN Research in Canada, 45 pages.  
Prepared for the Ministry of State for Urban  
Affairs, Ottawa, Ontario, November 1975.

This report is one of the earlier state of the art reviews and is exclusive to SIA in Canada. With some orientation to SIA meaning and definitions, the author sets out general state of the art research conclusions in terms of type, number and focus of studies completed. The appendices hold the detail of the paper, with Appendix 1 providing detailed findings of the survey of SIA studies and Appendix 2 recommending a methodological approach. The former is useful in describing the state of the art regarding conceptual approaches to SIA and methodologies. A bibliography is included.

308. D'Amore, Louis.  
1978 Social Impact Assessment in Canada - A Summation  
CAN of the First National Conference, 12 pages.  
L. J. D'Amore & Associates, 3680 Mountain,  
Montreal, Quebec, H3G 2A8.  
Presented at the First Canadian Symposium on Social  
Impact Assessment, The Banff Centre, Banff, Alberta,  
December 1978.

This paper summarizes proceedings of the conference which served to review and critique several dimensions of the state of the art of SIA. These dimensions include: central themes of SIA; current stage of development; unanswered questions; criteria of a successful SIA; "positive things happening"; and future directions. The summary of these aspects points out the accomplishments and positive developments of SIA while identifying the requirements and needs facing the state of the art.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

309. D'Amore, Louis J. and Sheila Rittenberg.  
1978 Social impact assessment: A state of the art review.  
CAN Urban Forum, Volume 3, Number 6, March-April 1978,  
pages 8-15.

The article reviews the background and evolution of SIA, and considers approaches to conducting assessments in the context of four central SIA phases. Techniques and mechanisms are described for each phase. A theoretical framework for the SIA is also put forward, as well as future directions for the state of the art, and conclusions. Conceptual diagrams for the community context of SIA are also included.

310. Flynn, Cynthia B.  
1976 Science and speculation in social impact assessment.  
AM Social Impact Assessment 11/12, November/December 1976,  
pages 5-14.

With a brief general state of the art orientation, this paper reviews available methods and guides for SIA. The author provides, in effect, a methodological state of the art review; quantification techniques, checklist alternatives and the like are considered. Methodological "Directions for the Future" and references are also noted.

311. Hitchcock, Henry.  
1977 Analytical Review of Research Reports on Social Impacts  
AM of Water Resources Development Projects, 203 pages.  
Submitted to U.S. Army Engineer, Institute for Water  
Resources, Kingman Building, Fort Belvoir, Virginia  
22060 (IWR Contract Report 77-3), March 1977.

"This analytical review of research reports on the social impacts of water resources development projects is designed to assist planners in identifying and evaluating the impacts of project actions. It helps maximize the use of existing research results and methods by presenting summaries (of the research done to date) at various levels of generality. It also identifies the implicit patterns of research in the area and suggests questions for future research on the social impacts of project actions to address."

The review has three levels of summary. First, and most specific, is a summary of the individual studies. The second summarizes all the study characteristics (e.g., research objectives, general methodology) and the last level of summary

### III. SOCIAL IMPACT ASSESSMENT (SIA)

reviews impacts identified through all the studies. An analysis of patterns formed by the characteristics and impacts further highlights research gaps, and finally research questions to address in the future are offered. A bibliography of the research reports is also included.

312. Plewes, M. and J. B. R. Whitney, editors.  
1977 Environmental Impact Assessment in Canada: Processes  
CAN and Approaches, 199 pages.  
Proceedings of a Symposium held at the Institute for  
Environmental Studies, University of Toronto, Toronto,  
Ontario, February 1977.

While not specifically dealing with social impact assessment, this volume provides some perspectives and approaches adaptable to SIA. The volume is a collection of papers presented at the Symposium; that meeting was intended to review the Canadian experience with EIA and serve as a benchmark for the 1977 state of the art. Papers submitted include reviews of methodologies, public participation, implications for decision-making and more general state of the art reviews. Twenty-one contributions comprise the volume.

313. Van Zele, Roger.  
1976 Conference on local and regional socioeconomic impacts  
AM of nuclear power plants: Summary of discussion.  
Social Impact Assessment 8, August 1976, pages 4-9.

The article is a summary of discussion that sought to identify and discuss economic and social impacts of nuclear plants at both local and regional levels. Certain "generic" issues associated with regional impact assessment were also considered. SIA was examined also in the broader context of energy facilities and resource development. Van Zele provides fairly detailed descriptions of each session's proceedings, noting key points put forward by speakers. Future "action steps" to improve the SIA research network are also noted at the conference's closing session.

#### Study Design

See also items 301, 309, 324, 328, 335, 338.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

314. Baldwin, Thomas E., et al.  
1976 A Framework for Detailed Site-Specific Studies of  
AM Local Socioeconomic Impacts from Energy Development.  
Draft. 20 pages.  
Energy and Environmental Systems Division, Argonne  
National Laboratory, 9700 South Cass Avenue,  
Argonne, Illinois 60439. December 1976.  
Prepared for The Regional Studies Program, sponsored  
by the Assistant Administrator for Environment and  
Safety, U.S. Energy Research & Development Admin-  
istration.

"This brief report describes an analytic approach. . . to assess the impacts of energy development in site-specific situations and to prepare recommendations for the mitigation of these impacts."

The framework concentrates on forecasting employment and population changes, and on evaluating the effects of these changes. A definition of socio-economic impacts is given, followed by a presentation of the suggested framework. An illustration of adapting the framework to a particular case follows.

315. Butler, R. W.  
CAN The social impact of tourism and recreation (17 pages).  
To be published in Proceedings of the Second Canadian  
Symposium on Leisure Research.  
Ontario Research Council on Leisure, 77 Bloor Street  
West, Toronto, Ontario.

The paper suggests some conceptual aspects of the social and cultural impacts of tourism and recreation. The approach to the paper is principally to attempt to answer four central questions related to the topic: Why do social impacts occur? How do they occur? What are social impacts? How can the negative impacts or costs be reduced or prevented? The author sets out the conceptual dimensions and arguments relating to these questions, and concludes that of critical concern in the field is the identification of common approaches and concepts. These and the greater understanding they would generate are increasingly important in light of the growing problems of social impacts in many tourist areas.

316. Connor, Desmond M.  
1977 Social impact assessment: The state of the art.  
CAN Social Impact Assessment 13/18, January-June 1977,  
pages 4-7.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

The article is actually an outline of a paper presented to the Ontario Association for Environmental Management. It is a thumb-nail sketch of the basic components of SIA and its central characteristics. Noted in point form are: SIA Concept, Objectives, Process, Approaches, Models, Methodologies, Types of Effects, Applications, and References.

317. Fitzsimmons, Stephen J., Lorrie I. Stuart, and Peter C. Wolff.  
1977 Social Assessment Manual: A Guide to the Preparation  
AM of the Social Well-Being Account for Planning Water  
Resource Projects, 289 pages.  
Westview Press, Boulder, Colorado.

Although written for consideration of the impact of water development plans, this volume is a comprehensive treatment of SIA, termed here a Social Well-Being Account (SWB). Social assessment is considered in the context of "multiple objectives planning". The central functions of the SWB are outlined. The rest of the volume is principally a manual for the conduct of a social assessment. The theoretical and methodological basis for a SWB Account is treated in Part 1 in detail, as well as its structuring and organization. Part 2 deals with preparation for the social assessment and how to implement the theory and methods established in Part 1. Part 3 contains several tables suggested for use in preparing the social assessment.

318. Grigsby III, J. Eugene and Madelyn J. Glickfeld.  
1976 A Seminar in Social Impact Analysis: Summary  
AM Discussion, 44 pages.  
School of Architecture and Urban Planning,  
University of California, Los Angeles.

This university seminar researched the state of the art of SIA and prepared a framework for SIA studies. This report documents how the seminar proceeded, the methods that students used for analysis, and the results of analysis. Results of the literature search, legislative review, and development and testing of the "conceptual framework" are summarized briefly. Similarly, the evaluative conclusions brought together by the students are noted. A bibliography is included. Of particular interest may be the appendices where detail is provided regarding interview responses on SIA (purpose, meaning, etc.), SIA legislation, and the framework and "step by step" process proposed.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

319. Grigsby III, J. Eugene and Madelyn Glickfeld, editors.  
1978 A Symposium on Social Impact Assessment and Human  
AM Services Planning, 108 pages.  
Department of Civil Engineering, Stanford University,  
Stanford, California. Report 1PM-2. February 1978.

"Social impact assessment of physical development projects and human services planning are oriented toward similar goals and employ similar approaches; however, there has been little cross-fertilization between these different planning areas. Discussions with people involved in both sets of activities suggested that a symposium to discuss common issues was much needed and would be well received."

The proceedings of the symposium is one of the few documents to treat Social Impact Assessment in the context of Human Services Planning. Although this material, as well as that relating SIA to Physical Development Programs, is largely in the urban context, principles, approaches and experiences are relevant and applicable. The state of the art in SIA is considered in terms of current and future implications. References are provided throughout.

320. U.S. Department of State, Agency for International  
1978 Development, Washington, D.C. 20523.  
AM Handbook 3: Project Assistance.  
TM 3:19 (2-15-78).

This volume is an analysis and authorization of AID-assisted projects and sets guidelines for carrying projects from inception to authorization. Appendices 4a and 4b are of relevance to the social dimensions of aid to technical assistance projects, loans and grants for capital projects. Appendix 4a deals with the "social soundness analysis" of projects, setting forth criteria for acceptability of projects including sociocultural feasibility, matching participators and projects, social consequences and benefits, etc.. Appendix 4b sets out detailed environmental procedures including social requirements.

321. Vlachos, Evan, et al.  
1975 Social Impact Assessment: An Overview, 104 pages.  
AM Submitted to the U.S. Army Engineer, Institute for  
Water Resources, Kingman Building, Fort Belvoir,  
Virginia 22060. IWR Paper 75-P7. December 1975.

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"The substance of this document is to present a general conceptual model for conducting social impact assessments. It is a first attempt to present in a coherent framework the assumptions, methodological strategies and techniques, procedures of data collection, organization and analysis of the social impact assessment to the entire project assessment process."

In so doing, the authors deal with "Profiling" in SIA, a methods analysis, evaluation of the SIA and "Management Considerations" in terms of Social Science and its status and integration regarding EIA/SIA organization and decision-making. A selected bibliography is provided.

#### Study Methods

See also items 307, 310, 311, 312, 317, 319, 321, 346, 349, 351, 353, 354, 355, 356.

322. Canada. Environment Canada. Federal Activities Branch, Environmental Protection Service and Federal Environmental Assessment Review Office.  
1978  
CAN  
Federal Environmental Assessment and Review Process: Guide for Environmental Screening, 78 pages.  
Minister of Supply and Services Canada (Cat. No. En 21-26/1978). Bilingual.

The volume outlines a systematic procedure for screening of projects to identify adverse environmental effects. Prepared to assist in meeting federal requirements for environmental screening, the document includes guidelines for consideration of socioeconomic effects. The socioeconomic factors included in environmental screening are demography; economy and manpower; regional transportation; housing and community infrastructure; health, education and social services; local government; and lifestyle and quality of life. Effects to consider of each are briefly mentioned.

323. Dietz, Thomas.  
1977 The role of demography in social impact assessment.  
AM Social Impact Assessment 23, November 1977, pages 2-10.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

The article focuses on methodological aspects of demography in SIA and the specific contributions that the field of demography can offer. Similarly, the demands of SIA suggest interesting research topics for demographers and these are specifically outlined with an eye towards the researcher audience. References are noted.

324. Finsterbusch, Kurt and C. P. Wolf, editors.  
1977 Methodology of Social Impact Assessment, 387 pages.  
AM Dowden, Hutchinson & Ross, Inc., Stroudsburg,  
Pennsylvania. Community Development Series/32.

This book is an inventory and appraisal of methodologies for social impact assessment. In addition to a main section reviewing methodological approaches, it considers methodologies in the context of the various phases of SIA as seen by the editors: Profiting, Projecting Assessment, and Evaluation. Additionally, the relationship of SIA and Public Policy is examined, as well as a state of the art statement. The book is a collection of 35 articles from authors in the field, with summaries and central methodological conclusions provided by the editors. References are noted throughout. The book is a substantial and recent work in SIA literature.

325. Flynn, Cynthia B. and Rosemary T. Schmidt.  
1977 Sources of Information for Social Profiling, 118 pages.  
AM Prepared for The U.S. Army Engineer, Institute for  
Water Resources, Kingman Building, Fort Belvoir,  
Virginia 22060. IWR Contract Report 77-9.  
December 1977.

This volume is a handbook-style report designed to show how impacted areas can be quickly and inexpensively profiled as a first step in a SIA. The key variables necessary for profiling are identified and include demography, public services, social well-being, etc. Sources of information for the variables are also located, and characteristics of sources (e.g., accuracy, access, frequency of reporting, etc.) are thoroughly outlined. Finally, a case study is provided to illustrate the use of the profiling technique.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

326. Frankel, Michael L.  
1978 A social and economic data base for public land use  
AM planning.  
Social Impact Assessment 29, May 1978, pages 3-12.

The Bureau of Land Management, in its development of a Strategic Information Plan, has a social and economic data base integrating the information sources required in implementing the human dimensions of land use planning. This data base is the focus of this paper; the author distinguishes between two aspects of impact assessment - reporting changes, and measuring significance of changes - and notes the particular information requirements of each. These fall into 5 general categories such as description of the action, description of the area to be examined, standards by which change is measured, etc. Dimensions of each of import to information retrieval are then described for each category.

327. Malecki, Edward J.  
1978 Socioeconomic impact analysis for policy research.  
AM Social Impact Assessment 26, February 1978, pages 3-9.

The article is addressed to policymakers and focuses on socioeconomic impacts of energy development in the western United States. The article is derived from an overall technology assessment of 6 energy resources; the author describes this study and goes on to comment about some of the methodology to assess socioeconomic impacts. The policy research being undertaken relative to socioeconomic impacts is then described; policy options in response to impacts are also suggested. References are noted.

328. Marty, Robert.  
1977 Comprehensive Analysis Guidebook: A Guide to Analysis  
AM of Alternate Actions on Public Wildlands Considering  
Economic, Environmental, Organizational, Social and  
Other Impacts, 75 pages.  
Department of Forestry, Michigan State University.

This volume is presented in handbook-style format to assist natural resource professionals involved in the planning process. The author offers a general analysis process, intended to suit most planning situations, and he introduces some analysis techniques. The "Comprehensive Analysis Process" is described as are methods of describing alternatives (in terms of courses of action) and regional impact. Methods of valuing economic and social impacts are treated separately in one section. How impacts occur and the extent of impacts are considered as well as means of weighing effects.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

329. Peelle, E., et al.  
1978 Social impact analysis.  
AM Social Impact Assessment 28, April 1978, pages 3-18.

The article reviews the work of the "Social Impact Assessment Group" - a research and consultative group to the U.S. Government. Its central purpose is the development and application of methodological tools regarding SIA of energy development. The group's work in Community Impact Assessment is reviewed, along with work regarding comparative technology assessments. Regional Impact Assessments, Policy Analysis work and EIS are also described. Methodology is treated in fair detail (e.g., classification methods) in the context of mini-case studies.

330. Roberts, Howard A. and Herman Sievering, project co-directors.  
1977 A Guide to Environmental Benefits Assessment in  
AM Economic Impact Studies, 450 pages.  
Illinois Institute for Environmental Quality,  
Chicago, Illinois. IIEQ Doc. No. 77/32.  
Report of the Environmental Management Program at  
Governors State University.

This volume is a comprehensive treatment of positive impacts, or benefits, arising from pollution control. The document's material evolves out of a framework to define a benefits assessment process; the framework is presented in one chapter, and each chapter following then deals with key aspects of each major stage in the process. Identification (of benefits), Analysis, Assessment and Presentation of the Assessment are the stages defined and for which steps are set out. Appendices provide technical material relating to concepts and methods.

331. Rowland, Marilyn.  
1978 Environmental Impact Assessment: A Review, 48 pages.  
AM Regional Economic Development Center, Memphis State  
University, 226 Johnson Hall, Memphis, Tenn. 38152.  
August 1978.

"The attainment of environmental impact assessments that are fair and complete and the effective use of such assessments in decision-making continues to be a highly desirable but somewhat elusive goal. As the need grows to consider likely consequences of new and proposed developments before they occur and before decisions are made, greater attention must be given to the methods used in preparing impact assessments. This report reviews needed areas of improvement and surveys various methods that have been used in making environmental impact assessments."

### III. SOCIAL IMPACT ASSESSMENT (SIA)

The review treats social impact assessment as a component of overall environmental impact assessment and begins with a consideration of the requirements and problems associated with environmental assessment. Assessment methodologies follow, with a discussion of the use of methods such as checklists, matrices, "networks" (frameworks to include secondary or indirect impacts), etc.

332. Solomon, R. Charles, et al.  
1977      Water Resources Assessment Methodology (WRAM) - Impact  
AM      Assessment and Alternative Evaluation. Interim  
         Report, c. 150 pages.  
         Environmental Effects Laboratory, U.S. Army Engineer  
         Waterways Experiment Station, P.O. Box 631,  
         Vicksburg, Miss. 39180. Technical Report Y-77-1.  
         February 1977.  
         Prepared for Office, Chief of Engineers, U.S. Army,  
         Washington, D.C. 20314.

This report has formed the basis for the impact assessment approach adapted by the Corps of Engineers to conduct environmental planning. The thrust of the study brought together the impact state of the art relative to water resources and synthesized a Water Resources Assessment Methodology (WRAM) for impact assessment and alternative evaluation. The report presents the findings of a review of 54 impact assessment methodologies. The WRAM model - based on the best features amongst the 54 - is subsequently set out and includes descriptions of its principle technique, components, and assessment variables. Limits in the state of the art are mentioned and appendices provide background data, including a list of variables for consideration in determining impacts.

333. Spangler, Miller B.  
1978      Methodology Guidelines and Decision Criteria for Social  
AM      Impact Assessment in the Licensing of Nuclear Power  
         Plants, 38 pages.  
         Presented at the Workshop on Formulating Guidelines for  
         Social Impact Assessment in conjunction with the Ninth  
         Annual Conference of the Environmental Design Research  
         Association, Tucson, Arizona, April 1978.

"This paper explores the need for improvements in methodology guidelines and decision criteria in which social impact assessments hold importance."

### III. SOCIAL IMPACT ASSESSMENT (SIA)

Discussion focuses on measures of the Nuclear Regulatory Commission to improve its analytical procedures, especially with regard to impacts related to water development and water uses. The paper "reviews briefly various methodologies for forecasting, pointing out the serious limitations of each including econometric modelling. It recommends utilizing a procedure which combines methodologies and which focuses on crucial impacts". References are noted.

334. Stoloff, David and Rebecca Kemmerer.  
1978 Site screening to minimize socioeconomic impacts of  
AM power facilities.  
Social Impact Assessment 33, September 1978, pages 2-18.

The authors state a rationale for impact assessment in utility plant siting, and in particular, that socioeconomic impacts are being given greater consideration as an area of environmental effects. The article describes the development of a computer-assisted socioeconomic screening method; the technique draws upon and refines the existing technique developed by the Tennessee Valley Authority.

335. Torgerson, Doug.  
1978 Social Impact Assessment as a Social Phenomenon:  
CAN The Problem of Contextuality, 93 pages.  
Faculty of Environmental Studies, York University,  
Downsview, Ontario.

"By adopting the perspective of the sociology of knowledge, we can stand back from social impact assessment in order to view it in context as a social phenomenon."

"The position of this paper is that the authoritative aura of 'science' (in the conventional sense of the word) is not appropriate for SIA. Employing a concept developed by the physicist Alvin Weinberg, the argument maintains that social impact assessment is more appropriately conceived as 'trans-scientific'. This must be recognized, moreover, if SIA is to be placed on rational grounds.

A pioneer in the field of policy sciences, Harold Lasswell has developed some methodological considerations which are significant for social impact assessment. The paper examines Lasswell's notion of 'configurative analysis', focussing in particular on the ideas of 'contextuality' and 'developmental constructs'. The relevance of Lasswell's position for SIA is

### III. SOCIAL IMPACT ASSESSMENT (SIA)

considered throughout the discussion. In reference specifically to the Berger controversy and the debate on nuclear power development, the importance of Lasswell's methodological views are related directly to various phases of the SIA process. The conclusion of the paper is that Lasswell's approach (or something like it) is indispensable if social impact assessment is to have a rational foundation."

336. U.S. Department of Highways. Prepared by Social and Economic  
1976 Planning Section of The Department of Highways,  
AM with the Community Development Services, Inc.,  
Seattle, Washington and the GMA Research Corpora-  
tion, Bellevue, Washington.  
Guidelines for the Identification and Analysis of  
Social Factors in Transportation Planning.  
Prepared for Washington State Highway Commission  
in cooperation with U.S. Department of Trans-  
portation, Federal Highway Administration.  
Washington State Highway Department Research  
Program Report 25.6. June 1976.

"The objective of this study was to develop criteria and procedures for the identification and measurement of social impacts in transportation planning and the process by which such analyses are integrated into the decision-making process. The guidelines developed from this study address several related but different parts of the total planning and design process. Two of the reports prepared as a part of this study are concerned with identifying and measuring social factors and conducting social and economic surveys to obtain necessary data. A third report is concerned with the development and implementation of community involvement programs. The assumption is made that an effective planning and design process must provide means by which the values and opinions of residents of affected communities and users of transportation facilities can be incorporated in technical studies and in the decision-making process.

Two additional reports contain guidelines for the operation of interdisciplinary teams and team scheduling and management. The systematic interdisciplinary approach undertaken in the State of Washington provides a means by which technical data, community values and opinions, and planning and design concepts and standards can all be evaluated by the team in reaching a recommended solution to a problem."

### III. SOCIAL IMPACT ASSESSMENT (SIA)

337. U.S. Department of Housing and Urban Development.  
n.d. A Guide: Social Environmental Assessment, Second  
AM Edition, 26 pages.  
Regional Office, Executive Tower, 1405 Curtis Street,  
Denver, Colorado 80202.

This is a checklist designed by field staff to be used by the insuring offices for environmental assessments of HUD housing, elderly and non-elderly, in rural and urban settings. It consists of a checklist of facilities, schools, parks, etc., with criteria for rating its adequacy. It does not treat questions of psychological impact such as community cohesion nor does it consider quality of services. For the developer, for example, it may provide one quick checklist to identify gross inadequacies at an early stage.

338. U.S. Department of Transportation.  
1975 The Environmental Assessment Notebook Series.  
AM Notebook 2. Social Impacts: A Guidance Manual  
for the Assessment of Social Impacts due to  
Highway Facility Improvements.  
Prepared by Skidmore, Owings & Merrill.  
Set available from Superintendent of Documents, U.S.  
Government Printing Office, Washington, D.C.  
20402. (Stock No. 050-000-00109-1.)

Notebook 2 is one section of a series dealing with social impacts of highway development. In total there are 6 notebooks which deal with Identification of Transportation Alternatives, Social, Economic and Physical Impacts, Organization and Content of Environmental Assessment Materials, and Environmental Assessment Reference and Summary. Some useful conceptual directions are set out in the general introduction of Notebook 2, as well as methodological considerations regarding approach and key assessment questions. The volume is then organized by three central social impacts: Community Cohesion; Accessibility of Facilities and Services; and Displacement of People. In each, definitions, analysis techniques, and data requirements are considered relative to the particular dimensions of each impact. References are included and specifically related to each impact area.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

339. U.S. Department of Transportation.  
1975     The Environmental Assessment Notebook Series.  
AM       Notebook 3. Economic Impacts: A Guidance  
          Manual for the Assessment of Economic Impacts  
          due to Highway Facility Improvements.  
          Prepared by Skidmore, Owings & Merrill.  
          Set available from Superintendent of Documents,  
          U.S. Government Printing Office, Washington, D.C.  
          20402. (Stock No. 050-000-00190-1.)

This is the third notebook of a series designed to guide the impact assessment (social, economic and environmental) of highway facilities. In total there are 6 notebooks and they are described in the above reference. This notebook identifies 5 major impact categories of economic effects of highway development. These are: Employment, Income and Business Activity; Residential Activity; Effects on Property Taxes; Regional and Community Plans and Growth; and Resources. For each, a definition of the impact is offered, and an assessment of the impact as well as "measures to minimize harm" are analyzed. Technical References are also provided for each impact category. The entire notebook series and overall concept of environmental assessment are also introduced and described briefly.

340. Wolf, C.P., editor.  
1974     Social Impact Assessment, EDRA 5, 198 pages.  
AM       Environmental Design Research Association, Inc.,  
          Box 23129, Washington, D.C. 20024.

Arising from the Fifth Annual Conference of the Environmental Design Research Association, this state of the art review deals with: The Problem of SIA, Approaches to SIA, Methodology of SIA and Empirical Applications. The presentation of material is as a collection of articles with comments or rebuttals by other writers on those analyses. Twenty-one contributions are included. References are provided throughout.

#### Policy Development

See also items 312, 324, 327, 333, 340.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

341. Canada. Parliament. House of Commons. Second Session,  
1976 Thirtieth Parliament, 25 Elizabeth II, 1976.  
CAN Bill C-326: The Environmental Impacts Assessment  
Act, Department of the Environment.

This outline of the Bill - in short, the "Environmental Impacts Assessment Act" - describes the essential features of this "First Reading". Definitions (e.g. environment, land, regulations, etc.) are specifically stated, and the application of the Act set out. Other key features of the outline are that content requirements of the EIA are stipulated, as well as the "review and notice" procedure. All other requirements and aspects of undertaking an EIA (e.g., Copies, Inspection of the EIA, etc.) are delineated in detail.

342. Hurtubise, F.G.  
1977 A Guide to The Federal Environmental Assessment and  
CAN Review Process: Canada's Policy on Environmental  
Assessment for Federal Activities, c. 18 pages.  
Office of The Chairman, Environmental Assessment Panel,  
Fisheries and Environment Canada, Ottawa, Ontario  
(Cat. No. En 103-4/1977). February 1977.  
Available in French as Guide du Processus fédéral  
d'évaluation et d'examen en matière d'environnement:  
Politique du Canada sur l'évaluation environnementale  
des activités fédérales. (Cat. No. En 103-4/1977F)

This brochure explains the review process for federal projects and points out the roles and responsibilities of the participants, including those of the Environmental Assessment Panel. Along with a brief history leading up to the formulation of the review process, the essential steps and requirements of parties concerned are outlined. The brochure takes the reader from the initial phase when "the process begins", to the decision-making phase. Sources for additional advice and information are listed.

343. Klessig, Lowell L.  
1976 Coping with environmental impact statements at the  
AM state and local levels: The interaction of public  
officials and social scientists.  
Social Impact Assessment 10, October 1976, pages 9-15.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

The article briefly reviews the evolution of SIA, highlighting the obstacles being faced in the field. Two efforts to improve the environmental impact statement where policy and government are concerned are also presented in summary form. Both efforts take place in Wisconsin, one at the state and one at the local level. The author ends with some general "advice" for the "social scientist" involved with impact assessment at state or local government levels. References are noted.

344. Peterson, John H., et al.  
1976 An anthropological critique of the proposed federal  
AM design policy.  
Social Impact Assessment 7, July 1976, pages 9-13.

This article summarizes individual critiques prepared by panelists at the Workshop on Proposed Federal Design Policy (March, 1976), and incorporates suggestions made by the audience. The policy is essentially concerned with economic, social, cultural and environmental impacts of federally assisted facility programs. Six policy areas are critiqued - three relating to environmental management and three to "human populations". The latter are comprised of Socioeconomic, Cultural, and Human Factors. Critiques deal with policy dimensions such as extent of focus, awareness of policy area interrelations and the need for public participation in the design process.

345. Willeke, Gene E. and Carol A. Willeke.  
1976 Contracting for Social Impact Assessment, 43 pages.  
AM Submitted to U.S. Army Corps of Engineers, Institute  
for Water Resources, Kingman Building, Fort Belvoir,  
Virginia 22060. IWR Contract Report 76-1. June 1976.

"This report discusses the problems associated with traditional contracting procedures when applied to new and challenging fields, such as the analysis of the social impacts of public works projects. The report, which draws upon recent experiences of Corps of Engineers planning procedures and contractor personnel, includes a general discussion of the typical contracting process utilized by the Corps in contracting for professional services, and chapters dealing with market development and contractor selection, development of scopes of work, and maintaining and integrating contract results with other planning activities."

This document will be of particular interest to agencies attempting to formulate policy and contracting procedures to apply to social impact assessment.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

#### Case Studies

See also items 314, 324, 325.

346. Campbell, Rex R., et al.  
1977 Population Change, Migration, and Displacement along  
AM the McClellan-Kerr River Navigation System, 116 pages.  
Submitted to U.S. Army Engineer, Institute for Water  
Resources, Kingman Building, Fort Belvoir, Virginia  
22060. IWR Contract Report 77-5. December 1977.

The study reports demographic impact resulting from a major Corps of Engineer system of multi-purpose lakes and navigation channels. The study concludes that waterways have in fact been a major factor in the area's migration rate. It reaches this conclusion through having examined the changes in size, distribution and composition of the population through secondary data and a survey of households. These findings are described, as well as a demographic review of the area from 1940-1975. Appendices outline study procedures and should be of methodological interest.

347. Dietz, Tom and Dan Ray.  
1977 The social impacts of growth in Santa Barbara and  
AM San Luis Obispo Counties.  
Social Impact Assessment 21/22, September/October 1977,  
pages 3-8.

"This paper discusses the social impacts of water-related growth in Santa Barbara and San Luis Obispo Counties. It outlines methods for assessing possible social changes that may accompany population and economic growth in the two counties and discusses their application in a current planning situation."

In addition to describing the communities and their "water and growth" situations, approaches to assessing impacts and implementation of methods are set out. Results and comments regarding testing of methods are detailed. The article ends with a closing statement on the value of SIA re water resources planning. References are noted.

348. Griffith, Carl.  
1978 Social impact assessment: The proposed Glengowan Dam.  
CAN Social Impact Assessment 30, June/July 1978, pages 4-11.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

The article is in fact a case study of the SIA carried out in conjunction with the proposed Glengowan Dam and Reservoir. The study was concerned with assessing the social impacts and to establish new approaches to their identification and analysis. Set in the context of the dam concept and study area, the author describes the SIA results. Findings are presented according to impacts such as Relocation and Displacement, Aesthetic Impact, etc. and are described in terms of nature and magnitude. The relationship between impacts is considered in an "Impact Scenario".

349. Harnisch, Arthur A., et al.  
1978 Chief Joseph Dam, Columbia River, Washington: Community  
AM Impact Report Update II: Measuring Construction Related  
Impacts on Local Schools, 25 pages.  
Submitted to U.S. Army Engineer, Institute for Water  
Resources, Kingman Building, Fort Belvoir, Virginia  
22060. IWR Contract Report 78-3. April 1978.

This is the second update report of the community impact study of the Chief Joseph Dam. Focussing on construction-related impacts on local schools, the report identifies impacts in terms of school enrollment and school operations and maintenance. The report also reviews practical methods for projecting these impacts, ways of financing mitigation efforts and considers future problems. (See also items 355 and 356.)

350. Hinkle, F. Jerome.  
1976 Alternative fuels impacts assessment.  
AM Social Impact Assessment 6, June 1976, pages 2-8.

The article is a description of research funded by EPA and ERDA and performed largely by the Stanford Research Institute. The study is a technology assessment of the impacts of resource extraction and synthetic liquid fuels production/distribution. The author describes the tasks pursued in the study in terms of two study phases. Key steps are noted, rather than outlined in detail. Next, results of the impact assessment are recorded in terms of the "critical impacts". Impacts described include resource availability, industrial decision-making and pollution. The central methodology of the study (use of scenario) is briefly described.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

351. Kreutzwiser, R. D.  
n.d. Socio-Economic Impact of Walt Disney World, Central  
(c. 1978) Florida, 7 pages.  
AM Department of Geography, University of Guelph, Guelph,  
Ontario.

The article describes aspects of the social and economic impact of Disney World, and outlines some methodological issues regarding measurement of impacts. The article is a brief overview; as such, impacts are considered in summary form and principally through a chart which identifies them through a pre- and post-Disney comparison method. Indicators such as school enrollment and population changes are used as measurements. Problems with the SIA methodology are also considered briefly and relate to difficulties in measuring impacts (e.g., basis of selection for socioeconomic indicators).

352. Logsdon, Charles L., et al.  
n.d. Copper River - Wrangells: Socioeconomic Overview.  
(c. 1976) The Institute of Social and Economic Research and  
AM The Agricultural Experiment Station, University  
of Alaska for The U.S. Forest Service.

This report is relevant as an example of the community profiling aspect of social impact assessment. The region is introduced with an overview of its natural and community-pattern make-up. Social and economic conditions and characteristics are then considered. First, these are analyzed as they occur within the particular population groups and communities within the region. Second, characteristics such as distribution of income, transportation facilities, and cost of living are outlined for the region as a whole. The other chapters dealing with recreation and economic development round out the region's description and complete the profiling model.

353. Motz, Annabelle Bender.  
1977 A Research Strategy for Social Impact Assessment:  
AM A Tale of Three Cities, 130 pages.  
Submitted to U.S. Army Engineer, Institute for  
Water Resources, Kingman Building, Fort Belvoir,  
Virginia 22060. IWR Research Report 77-R2.  
December 1977.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

This report is one of a continuing series of studies of the impacts of the completed McClellan-Kerr Arkansas River Navigation System. The report "reflects one approach to social impact assessment, based on the systematic comparison of differential community response along the waterway". The study analyzes 3 communities, and its central approach is to rely on archival sources of data. This represents a shift in SIA methodology; the report demonstrates a "research strategy" to determine the likely consequences of environmental changes, based on the hypothesis that the community response to a major project is a function of community structure and leadership.

354. Richardson, Sue E. , et al.

1978 Preliminary Field Test of the Water Resources Assessment  
AM Methodology (WRAM); Tensas River, Louisiana, Final  
Report, 99 pages.

Environmental Effects Laboratory, U.S. Army Engineer  
Waterways Experiment Station, P. O. Box 631,  
Vicksburg, Miss. 39180. Miscellaneous Paper Y-78-1.  
February 1978.

Prepared for Office, Chief of Engineers, U.S. Army,  
Washington, D.C. 20314.

"A preliminary field test was made of the Water Resources Assessment Methodology (WRAM). Intended for use by an interdisciplinary team, WRAM is a systematic approach to assessment of impacts and evaluation of alternatives for water resource programs and projects. This pilot field application of WRAM to the Tensas River Project in eastern Louisiana primarily used existing data." (See Item No. 332 for development and design of WRAM.)

"Background of the Tensas River Project is presented as well as a description of the study area and the flood-control alternatives under consideration by the U.S. Army Engineer District, Vicksburg. An interdisciplinary team was formed to conduct the field test. Assessment variables were selected and weighted relative to their importance in assessment and evaluation within each of the four accounts delineated by Principles and Standards: national economic development (NED), environmental quality (EQ), social well-being (SWB), and regional development (RD). The projected effects on each variable were then scaled across alternatives and the without-project condition."

Impact prediction, assessment, evaluation and interpretation of impacts are then considered.

### III. SOCIAL IMPACT ASSESSMENT (SIA)

355. U.S. Department of the Army, Seattle District, Corps of  
1978 Engineers, P.O. Box C-3755, Seattle, Washington  
AM 98124.  
Chief Joseph Dam, Columbia River, Washington:  
Community Impact Report, February 1978, 95 pages.

This community impact study examines the socioeconomic and economic effects resulting from raising the pool and installation of additional hydroelectric units at Chief Joseph Dam, Bridgeport, Washington. Findings of the study with respect to population impacts, guidelines to deal with problems, and potential sources of assistance to impacted communities are reported. Additionally, a description of the study area is presented and provides an example of the profiling requirement within SIA. Also of interest may be an appendix which briefly summarizes study procedure.

356. U.S. Department of the Army, Seattle District, Corps of  
1978 Engineers, P.O. Box C-3755, Seattle, Washington,  
AM D.C. 98124.  
Chief Joseph Dam, Columbia River, Washington:  
Community Impact Report: Update 1, February 1978,  
36 pages.

This report updates the original 1973 research for the community impact study of Chief Joseph Dam and identifies the likely places of residence of the new population projected. Changes in condition and extent of public facilities are considered, as well as population trends, and projections under three alternative futures. The extent to which public facilities can support projected population levels is also examined. Finally, a recommended set of planning projections for the six "impacted" communities indicates probable development trends for the study area. (See item 349.)

### III. SOCIAL IMPACT ASSESSMENT (SIA)

#### Other Related Items

- I. 103, 122.
- II. 218, 221, 224, 239, 242, 244, 246, 253, 254.
- III. 301-356.
- IV. 403.
- V. 512-525.
- VI. 621.
- VII. 702, 716.
- VIII. 802, 805, 807, 808, 811.

#### IV. RESOURCE COMMUNITIES

The term "Resource Communities" refers to those communities which are directly affected, in one way or another, by being located adjacent to a major resource-related development. In some cases, the community may already be in existence when the development begins; in other cases, the town may grow up to service a mine or construction site. Whatever the circumstances, both types of communities find themselves facing stresses not faced by the average small town. A further complicating factor is that many of these communities tend to be located in frontier areas, such as the Canadian North.

The first document in this category provides a useful introduction to the set of problems faced by resource communities. The documents under Community Profiles examine what life and the people are like in these communities. How they might best be planned and managed if they are to develop successfully, is examined in Planning and Management. The final group of documents consists of case studies of specific communities.

## IV. RESOURCE COMMUNITIES

### Introduction

401. Pressman, Norman E. P., editor.  
1976 New communities in Canada: Exploring planned  
CAN environments, 369 pages.  
Special issue of Contact, Journal of Urban and  
Environmental Affairs, Volume 8, Number 3.  
Faculty of Environmental Studies, University of  
Waterloo, Waterloo, Ontario, August 1976.

This collection of thirty-five papers examines planned new towns and communities from the multidisciplinary perspective of some of Canada's leading authorities in the field. Both urban-centered and more or less remote resource-based towns are included, with a special section on resource-based settlements in the Canadian North. Subject areas range from national urban land strategy, problems of local government, environmental planning and management, and public policy to economic aspects, transportation, housing, and residents' attitudes to quality of life. A selected bibliography of about 225 references is appended. The collection "represents the most comprehensive compendium of information available on the Canadian new community experience".

### Community Profiles

See also item 408.

402. Canada. Energy, Mines and Resources Canada.  
1976 Mining Communities, Mineral Bulletin MR 154, Mineral  
CAN Policy Series, 49 pages.

The purpose of this report is to stress the necessity for comprehensive social planning of resource communities, to achieve adequate quality of life and to stimulate discussion among the participating groups. The specific aim is to examine the physical and social settings of mining communities, the work environment, and community services and facilities, relating these to perception of quality of life. The report describes common characteristics of mining communities, and also comments on the employment conditions, and community services and facilities. It draws implications from economic, environmental, and social and psychological aspects for pre-planning and developmental options. These findings are tabled and included in the report. A summary of findings is included with recommendations for consideration in future planning.

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403. Cortese, Charles F. and Bernie Jones.  
1977 The sociological analysis of boom towns.  
AM Western Sociological Review, Volume 8, Number 1,  
pages 76-90.

Though not an entirely new phenomenon in the western states, with the launching of hundreds of energy projects, the region is experiencing an explosion of boomtown growth which is qualitatively and quantitatively different from that of earlier times. The authors criticize social impact studies for their inconsistency of approach, their frequent lack of an explicit theoretical base, and for often focusing on economic rather than social impacts. Their paper, therefore, aims to identify social impacts which seem to be universal generalizations whenever small rural communities become boomtowns, based on ethnographic research conducted primarily in three boomtowns. They examine the impacts of the boom experience on institutions like local government, the economy, education, and social services; on social structures; on local culture; and on individuals. Boomtowns undergo significant social and cultural changes in four or five years which take decades to evolve elsewhere. The social-cultural impacts of this intense process of urbanization cannot be seriously mediated by supplying adequate housing or improved medical services, since such "solutions" are part of the problem of increasing impersonalization, centralization, etc. Social impact studies should focus on cultural and social changes that have occurred and enable those communities which still have the ability to choose to be aware of the full effects of that choice.

404. Lucas, Rex A.  
1971 Minetown, Milltown, Railtown: Life in Canadian Communities  
CAN of Single Industry, 433 pages.  
University of Toronto Press, Toronto, Ontario.

This sociological study describes the social and economic characteristics of single-enterprise communities which, the author maintains, are significantly different from other types of community. Typically, these towns have a short past, depend on advanced technology, and were built around a resource-based industry or transportation. Three communities were studied in detail--a railtown in Ontario, a minetown in the Maritimes, and a milltown in Quebec. The common patterns found here were confirmed by interviews and questionnaire replies from a wide range of single-industry communities. The research spans two decades. The communities chosen for study were all below 30,000 population and at least 75% of residents worked for the single-enterprise and its supporting institutional services. Almost one million people lived in single-industry communities and this can be expected to increase. The author describes a four-stage life cycle

#### IV. RESOURCE COMMUNITIES

for single-industry communities, the organization of work and labour relations, social services, interpersonal relationships, and social conflict and control, and concludes with a discussion of the social implications of his findings.

##### Planning and Management

See also items 402, 410, 413, 414.

405. Gilmore, John S.

1976 Boom towns may hinder energy resource development.  
AM Science, Volume 191, February 13, 1976, pages 535-540.

This article discusses the problems faced by isolated rural communities faced by a rapid increase in population because of renewed interest in local energy resources. The communities are unable to provide the services and facilities required and suffer a reduction in the quality of life. When this happens, productivity is likely to decline and operating costs rise, and less money is available to support public-sector activities. This leads, in turn, to a further decline in services and greater dissatisfaction amongst the population. The author concludes that these communities need help in growth management and he provides a plan, and areas of focus, for the various communities to examine and analyze.

406. Lajzerowicz, J. and R. M. Woodbridge.

1977 Environmental Protection and Mineral Management Dilemmas  
CAN in the Sudbury Area, 38 pages.  
Energy, Mines and Resources Canada, Minerals, 580 Booth  
Street, Ottawa, Ontario K1A 0E4. September 1977.

This report looks at the possible repercussions of environmental control measures related to the mineral industry. It deals primarily with the experience of Inco Limited, in Sudbury, and concerns the many attitudes to economic, technological, and ecological factors, that must be taken into account when environmental protection measures are integrated with sound mineral resource management. The bulk of the report examines management problems that must be resolved because of these measures, as well as in-plant environmental health problems. However, there is some consideration of corporate vs. social costs and benefits, and the role of government.

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407. Resource Planning Associates, Inc. (Washington, D.C.), assisted by  
1977 SCET International (Paris, France).  
AM Comprehensive Community Planning for Energy Management  
and Conservation: Developing and Applying a Coordinated  
Approach to Energy-Related Community Development,  
Volumes I and II.  
Prepared for Energy Research and Development Administration,  
Office of The Assistant Administrator for Conservation,  
Division of Buildings and Community Systems, Washington,  
D.C., (ERDA Contract No. E (49-1)-3879; RPA Reference  
No. RA-77-0319), October 1977.  
A 30-page executive summary of this report is available  
from: National Technical Information Service, U.S.  
Department of Commerce, 5285 Port Royal Road, Springfield,  
Virginia 22161.

To achieve the objectives of energy efficiency in established communities and in the development of new communities of the Community Systems Program of ERDA, several research projects were initiated to develop the methodological and analytical tools needed by such communities to implement comprehensive energy planning and management. This present study analyzes the community-development process and formulates an organization approach to resolving the institutional and financial issues arising from energy-related community development, specifically for small, remote, rural communities in the western USA experiencing rapid growth induced by the development of energy-supply projects.

Volume I examines the specific problems of boomtowns and new towns in the USA, and surveys European approaches and mechanisms for managing urban growth, especially in new towns, to identify aspects appropriate to the western boomtown context. A general approach to growth management is developed, and then adapted to a test site (Mercer County, North Dakota). The effects of applying the adapted approach are estimated and evaluated for the test site. Conclusions: At least 72 roles or management functions must be adequately performed and systematically coordinated in the development process if the characteristic problems of boomtowns are to be avoided. The general approach can be adapted to a variety of energy-supply-related rapid-growth situations and would ensure a more efficient performance of development activities than any other approach now in use. The general approach is not directly applicable to managing energy-related development in urban and suburban settings, though the process used to formulate the approach is applicable to a variety of energy-related situations.

Volume II consists of appendices to Volume I, e.g., methodology, profiles of American boomtowns and European communities, inapplicable approaches.

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408. Siemens, L.B.  
1973 Single-Enterprise Community Studies in Northern Canada,  
CAN 54 pages.  
Center for Settlement Studies (defunct), The University ...  
of Manitoba, Winnipeg, Manitoba, December 1973.  
(Xerox copies available from Mr. Henry Jacobs, Office  
of the Dean of Graduate Students, University of  
Manitoba, Winnipeg, Manitoba.)  
Prepared for Seminar on Man and the Environment: New  
Towns in Isolated Settings, held in Kambalda, Western  
Australia, August 1973.

This paper was prepared for a UNESCO seminar which examined both the theory and practice of living in remote communities. The author presents an overview of some Canadian studies and deals with the planning and quality of life in single-enterprise communities along the Canadian resource frontier. Problems in planning in northern Canadian communities are reviewed, followed by a discussion of five central concerns facing planners of new towns in the North. These are: environment and ecology; social and psychological problems; values in planning; converting residents into citizens; and regional, permanent or non-permanent communities. Research questions related to methodology and team functioning are also commented upon.

409. U.S. Department of Housing and Urban Development, Office of  
1976 Community Planning and Development.  
AM Rapid Growth from Energy Projects: Ideas for State and  
Local Action; A Program Guide, 59 pages.  
701 Comprehensive Planning Program in cooperation with  
The Federal Energy Administration, HUD-CPD-140,  
April 1976.

This book was written as a guide to small communities which find themselves faced with the need to expand, when suddenly affected by a major energy project. The object of this publication is to help these communities; by showing them what kinds of impact they can expect from the project; to help them share ideas with other communities, based on actual experience; to explain to them what sources of help are available to them in terms of information, planning, and financial assistance. The publication also includes four small case studies of areas affected by resource development: three of these are counties in the U.S.; the fourth considers Scotland and the discovery of North Sea oil.

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##### Case Studies

See also item 409.

410. Fletcher Environmental Planning Associates, and Maksymec & Associates  
1977 Limited.  
CAN Alternative Approaches to the Planning and Development  
of Canadian Resource Communities, 138 pages.  
Prepared for the Urban Policy Analysis Branch,  
Non Metropolitan Community Development Directorate,  
Ministry of State for Urban Affairs, October 1977.  
A brief executive summary (December 1977) is available.

This project examines and compares 3 possible approaches to the planning and development of Canadian resource communities, i.e., private, public, and a private-public mix. The objectives are as follows: (1) a description of the major characteristics of each of the approaches as they relate to economic considerations and their impacts; (2) formulation of criteria for assessing the characteristics of each approach for achieving a balanced community; (3) the application of the criteria to demonstrate the merits and limitations of each approach in achieving balanced communities. The possibility of developing a "needs/support" matrix is also examined.

The study uses a case study approach, examining 6 communities selected to cover some of the parameters of Canadian resource communities. The areas considered are: costing, feasibility of development, preplanning, financing comparisons of resource towns with balanced communities, construction camps and temporary buildings, and the planning and design aspects. Tables and illustrations, and a selected bibliography, are included.

Finally, the conclusions are summarized and recommendations, findings, and pertinent considerations, for ensuring an adequate quality of life in resource communities, are described.

411. Kerri, James N.  
1971 Functions of voluntary associations in a resource frontier  
CAN community: The case of Fort McMurray, Alberta, 35 pages.  
Two Studies on Fort McMurray.  
Center for Settlement Studies, University of Manitoba,  
Winnipeg, Manitoba. Series 2: Research Report No. 6,  
October 1971.

This report examines the role that voluntary associations play in the community of Fort McMurray, Alberta. The author defines the term "voluntary association" very rigorously and, thus, has excluded many informal groups in the community which may have a greater impact

#### IV. RESOURCE COMMUNITIES

on community affairs. However, despite this limitation, he has provided a new perspective on the role that these associations play in a resource community. They are seen as playing an important role where the community is dominated by a single enterprise, in that they may act as mediating institutions between the new community and the enterprise. They are also effective in facilitating adjustment to the community, by its members giving it structure and helping to minimize conflict. The role of voluntary institutions in the community is seen as being far more important than that played by similar institutions in more economically diversified towns and cities.

412. Matthiasson, John S.  
1970      Resident Perceptions of Quality of Life in Resource  
CAN      Frontier Communities, 41 pages.  
Center for Settlement Studies, The University of Manitoba,  
Winnipeg, Manitoba. Series 2: Research Report No. 2.

This report looks at some of the data collected during a study, by the Center for Settlement Studies, to examine how the residents of a northern resource community perceive the quality of life, not only in their own community, but in others like it. The community of Fort McMurray, Alberta was chosen for the study. The researchers attempted to test the hypothesis that, in order for immigrants to northern resource communities to receive maximum satisfaction of their expectations, many aspects of life must be closely related to their previous life experiences, and certain aspects must be significantly better to compensate for areas that are inadequate. This paper is only a preliminary report, which analyzes three items from a lengthy questionnaire given to the residents of Fort McMurray. The interpretations of the data are tentative and the methodology not always problem-free; however, the author thinks that it may have some use for other communities wishing to evaluate their quality of life.

413. Matthiasson, John S.  
1971      Resident mobility in resource frontier communities: An  
CAN      examination of selected factors, 54 pages.  
Two Studies on Fort McMurray.  
Center for Settlement Studies, University of Manitoba,  
Winnipeg, Manitoba. Series 2: Research Report No. 6,  
October 1971.

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This report is based on part of the data collected during the study, by the Center for Settlement Studies, of Fort McMurray, Alberta. It examines the mobility patterns of the residents of Fort McMurray and their reasons for going to the community, as well as their perceptions of the motivations of other residents. Reasons for residents leaving the community are also examined. The report concludes that the high mobility of residents of Fort McMurray is related to a previous pattern of high mobility found amongst the residents, rather than actual dissatisfaction with the life in Fort McMurray. Therefore, it suggests that if it is desirable to establish resource frontier communities with stable populations, it would probably be necessary, during recruitment, to screen out those families or individuals with a background of high mobility and favour those who would prefer a permanent or semi-permanent settlement.

414. Trade Union Research Bureau (Vancouver, B.C.).  
1974      The Mackenzie Story, 61 pages.  
CAN      Prepared for and published by the Citizens Committee  
            of Mackenzie, British Columbia.

This is a study of the history and development of a forest industry and town in the district of Mackenzie, B.C. The first part gives the history of development in this area and how a virtual monopoly on this development was given by the government of W.A.C. Bennett to B.C. Forest Products. This eventually led to the creation of a lake covering an area of 640 square miles as a result of the dam built for the Peace River Power project. Because of the flooding of the area, the local Indian band, the Tallgrass Indians, were dispossessed with no warning and virtually no compensation. When the community of Mackenzie was planned, to service the growing forest products industry, the responsibility and authority for the entire townsite was given by the B.C. government to B.C. Forest Products for a period of six years. Mackenzie became a company town and it was not until 6½ years later that its first municipal elections were held.

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##### Other Related Items

- I. 103, 122.
- II. —
- III. 319.
- IV. 401-414.
- V. 518, 528.
- VI. —
- VII. —
- VIII. 801, 805, 806.

## V. NORTHERN DEVELOPMENT

Although relatively small in volume, this section is comprehensive in scope and depth and points out that the North is a sensitive region which is the subject of much study.

The richest material is that which deals with impact assessment of planned or current development, principally in terms of natural resource development. Here, some of the most acclaimed Canadian impact studies have been done, most notably that of the Mackenzie Valley Pipeline. Through several studies, the issues, impacts, and benefits that touch all aspects of native peoples' lives are thoroughly treated. Readers with an eye towards the field of Impact Assessment itself will find that the material under that heading lends itself well to a consideration of approaches, methods, scope of studies, etc.

The items under Planning and Development in the North and Decision-making and Policy point out the difficult issues and complex requirements currently facing northern development. The attitudes and perceptions of native people encountering change and the implications for human development in the North are the focus of the final group of documents under Socio-cultural Implications.

## V. NORTHERN DEVELOPMENT

### Planning and Development

501. Canada. Department of Regional Economic Expansion.  
1973 Western Northlands: Economic Circumstances and  
CAN Opportunities, 27 pages.  
One of a series of staff papers prepared by the federal Department of Regional Economic Expansion as a contribution to federal-provincial consultations on regional development policy in Canada. April 1973.

The Western Northlands is a relatively unique region in the North, combining portions of 4 other regions of the continent. This report sets out the socioeconomic circumstances for development in terms of the historical perspective, natural resources, "duality and disparity", selected social data and government and industry expenditures. Implications of those circumstances are then translated into socioeconomic opportunities in the Northlands area. The central opportunity is seen in "social gain based on personal growth and positive self-concept, married to orderly economic development sensitive to that end".

502. Canada. Environment Canada. Liaison and Co-ordination Directorate,  
1977 Ottawa, Ontario.  
CAN Ethical principles for the conduct of research in the North.  
MAB Canadian Communiqué, Number 6, March 1977, 10 pages.  
Discussion paper by a sub-committee of The Working Group for Canada/MAB Sub-program 4. Bilingual.

The problem addressed by this discussion paper is the relationships between scientists and northern residents, and the social disruption that research has caused in the North. The paper proposes principles for the way in which research should be conducted and promotes collaboration between researchers and northern people. Principles for the conduct of northern research and principles for community involvement are detailed, as well as those for reporting the results of research. Applying the principles is also considered.

503. Canada/MAB.  
1977 Sub-Program 4 - Science for the North: Research  
CAN Framework, Report 8, 18 pages.  
Canadian MAB Programme Secretariat, Liaison and Coordination Directorate, Department of the Environment, Ottawa, Ontario K1A 0H3. January 1977.  
Prepared for The Canadian Committee for MAB and The Interdepartmental Committee for MAB. Bilingual.

## V. NORTHERN DEVELOPMENT

This report advocates a theme and research framework to promote northern science development which is more responsive to problems as perceived by northern residents. Its central theme is "Science for the North". The paper first presents the northern context for the research framework, and puts forward several premises about the nature of northern society on which the framework is based. The advocated theme is then outlined, with the emphasis on how northern studies should be approached, rather than listing the specific research which should be undertaken. The research framework stresses the use of approaches from science as well as from northern cultures; specific recommendations evolving from and promoting this central theme are, finally, outlined in the paper.

504. Keith, Robert F. and Janet B. Wright, editors.  
1978      Northern Transitions: Second National Workshop on People,  
CAN      Resources and the Environment North of 60°, Volume II,  
February 1978, 462 pages.

This Second National Workshop signalled the renewed commitment of the Canadian Arctic Resources Committee as a monitor of northern development. These proceedings are detailed and comprehensive, a culmination of the Committee's long-term study of resource policy and land use in the North.

The volume complements the workshop format which stressed both broad thematic issues, and more specific problem areas. Part I deals with the three themes of: the land claims issue, the state of planning in the North, and northern land-use law and resource policy. Part II focuses on native land claims where, in the workshop, major native organizations outlined their positions. A transcript of their discussion is presented.

Part III records the proceedings of the ten working groups, including the background documents used by them, as well as their reports and recommendations. The final section records the concluding plenary session with its summary and overview of issues, and statement of the Committee's position regarding issues raised.

Some of the topics for discussion by the working groups, which are reported here, included: land-use planning; renewable resource development; political development; and water resource development.

505. Nickel, P., editor-in-chief.  
1975      Proceedings of Manitoba Hudson Bay Lowlands Conference,  
CAN      February 6 and 7, 1973, 90 pages.  
The Natural Resource Institute, University of Manitoba,  
Winnipeg, Manitoba R3T 2N2. April 1975.

## V. NORTHERN DEVELOPMENT

The Natural Resource Institute's conference was organized to evaluate the then current information base for planning of the Lowlands, and to determine what future information would be required for informed decision-making. These proceedings present the results of group discussions at the Conference, and research needs identified. Examples of these needs include interdisciplinary research and appropriate packages of information to help evolve new approaches to planning and decision-making. Conference organization and techniques are also described in the volume.

506. Ørvik, Nils and Kirk R. Patterson, editors.  
1976        The North in Transition, 168 pages.  
CAN        Centre for International Relations, Queen's University,  
            Kingston, Ontario.

This volume is a collection of essays which address current issues surrounding development of the North; principally these reflect a concern for the way development is being carried out--the pace of change, expectations of native peoples, impact on social systems, etc. The titles of the essays illustrate the scope of the material:

Nils Ørvik. Towards a theory of northern development.

Paul Welsman. Education of native peoples in the Northwest Territories: A northern model.

Lesley Paterson. The co-operative movement in the Canadian Arctic.

Richard Hunter. Development of local government in the Northwest Territories.

Erik Madsen. Federal commissions and northern development.

Kirk R. Patterson. The theory and practice of home rule in the international North.

507. Usher, Peter J.  
1974        Geographers and northern development: Some social and  
CAN        political considerations.  
            Alternatives, Trent University, Peterborough, Ontario,  
            4(1), pages 21-25.  
            Edited and reprinted as "Northern development: Some  
            social and political considerations", in Managing  
            Canada's Renewable Resources, edited by R. R. Krueger  
            and B. Mitchell, Methuen, Toronto, 1977, pages 210-218.

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This paper discusses the impact of the Mackenzie Valley pipeline and the role that geographers specifically can play in minimizing impacts. Social aspects of native land claims, employment, economic impact, and effects on community and political life are touched upon. The implications of these impact areas for the role of the geographer are then considered. Some of the premises and pre-research stances of impact studies are examined as well as the professional responsibilities of impact researchers.

### Decision-Making and Policy

See also items 502, 504, 514.

508. Berger, Thomas R.  
1976 The Mackenzie Valley Pipeline Inquiry.  
CAN Queen's Quarterly, Queen's University, Kingston, Ontario,  
Volume 83, Number 1, Spring 1976, pages 1-12.

This brochure-like reprint outlines the terms of reference, mandate and functioning of the Pipeline Inquiry. Introduced in its context of a Royal Commission, the Inquiry is described in terms of its "actors" (e.g., funding intervenors, assessment group), terms of the hearings, dealing with the media and logistical aspects. Issues facing the Inquiry are identified within an overall statement of the Future of the North.

509. Canada. National Energy Board.  
1977 Reasons for Decision: Northern Pipelines, Volume 3,  
CAN June 1977, about 550 pages.  
(Supply and Services Canada Cat. No. NE 22-1/1977-1-3).  
French version available as Canada, Office National  
de L'Energie, Motifs de décision: Pipelines du Nord.

This is the last volume of the series describing the reasons for, and process of, decision-making for northern pipelines, and deals with regional socioeconomic impacts. Six parties are applicants for pipelines and this volume represents the projects of the Mackenzie Valley pipeline and Alaska Highway pipeline. The volume is structured so that likely impacted areas are first described, and then summaries of evidence regarding impact on the Mackenzie Valley, and on the Yukon, are presented. Views of applicants and of residents are included with the evidence. Finally, the National Energy Board's own views regarding impact are given, including a comparative assessment of both areas and observations regarding a monitoring authority.

## V. NORTHERN DEVELOPMENT

510. Canada. Science Council of Canada. Committee on Northern  
1977 Development.  
CAN Northward Looking: A Strategy and a Science Policy  
for Northern Development, 95 pages.  
Report Number 26, August 1977. (Supply and Services  
Canada Cat. No. SS 22-1977/26).

This volume addresses the question of the role of science and technology in northern development and the formulation of northern science policy. Areas of concentration are: the decision-making processes for northern development; policy concerns; the pacing of northern development; and the relationship between technological, economic, sociological, and political aspects of northern development. The Science Council essentially recommends a development approach which combines large-scale exploitation projects, with smaller-scale projects focused on continuing traditional activities. This strategy is outlined, along with initiatives to support the "mixed development" approach. The direction and control of development are also treated. The report recommends four principles which should guide the formulation and implementation of science policies for northern development and which would serve as performance standards for demonstration projects, regulations, large projects, and other actions. The study is set in the context of a profile of the North, and reviews its development or exploitation both historically and in terms of contemporary trends.

511. Gibson, Robert B.  
1978 The Strathcona Sound Mining Project: A Case Study of  
CAN Decision Making, 274 pages.  
Science Council of Canada, Ottawa, Ontario. Background  
Study Number 42. February 1978. (Supply and Services  
Canada Cat. No. SS 21-1/42).

This is one of the case studies commissioned by the Science Council to reveal relevant issues of northern development and to provide insights into the nature and quality of current decision-making processes. The study is restricted to the decision-making process, and does not include an examination of the Strathcona project itself. The central concerns of the study are the nature and treatment of social, environmental, and economic issues arising during the project's decision-making. These issues comprise the three main chapters of the volume and are examined in terms of their contexts, dimensions, and treatment in decision-making. A historical and chronological account of the project's decision-making process is also provided.

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512. Keith, Robert F., et al.

1976

CAN

Northern Development and Technology Assessment Systems:  
A Study of Petroleum Development Programs in the  
Mackenzie Delta-Beaufort Sea Region and the Arctic  
Islands, 219 pages.

Science Council of Canada, Ottawa, Ontario. Background  
Study No. 34, January 1976. (Information Canada Cat.  
No. SS 21-1/34.)

This volume is one in a series of studies conducted to examine decision-making processes in the North and to identify influencing factors on northern development. This petroleum study "traces the history of oil exploration programs in the Mackenzie Delta-Beaufort Sea areas. It also classifies the social groups impacting and impacted upon by these programs, and analyzes the influences on regulatory, policy, judicial and economic decisions which have been taken". Social perspectives and dimensions are woven in as the authors discuss the "actors" (social groups) involved in oil programs, the information frameworks informing decision-making and the issues associated with oil exploration. Background perspectives, as well as the history of the Petroleum Development Program, are also outlined.

### Impact Assessment

See also item 509.

513. Berger, Thomas R., Mr. Justice.

1977

CAN

Northern Frontier, Northern Homeland: The Report of the  
Mackenzie Valley Pipeline Inquiry, Volume One, 213 pages.  
(Supply and Services Canada Cat. No. of English edition  
CP 32-25/1977-1; Cat. No. of French edition CP 32-25/  
1977-1F.)

Social, economic and environmental impacts expected of the Mackenzie gas pipeline and energy corridor are dealt with in this first volume of the Inquiry findings. Terms and conditions necessary should the pipeline be built are set out in Volume Two. The reader can expect a most comprehensive treatment of anticipated impacts as Canada's most recent and most renowned Inquiry revealed the dimensions necessary to properly understand the extent and nature of impacts. As such, the human, physical and historical environments within which the pipeline should be assessed are set out. Similarly, the particular geographic regions--the Northern Yukon, the Mackenzie Delta and the Mackenzie Valley--are described for their values,

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physical specialities, issues and aspirations. The scope and concepts of the project itself are also outlined to weigh against these environments. The cultural, economic and social impacts anticipated are then outlined and treated separately. Finally, native land claims form one section; the history, nature and extent, and specifics of these claims, are dealt with.

514. Berger, Thomas R., Mr. Justice.  
1977 Northern Frontier, Northern Homeland: The Report of the  
CAN Mackenzie Valley Pipeline Inquiry. Volume Two: Terms  
and Conditions, 268 pages.  
(Supply and Services Canada Cat. No. for English edition  
CP 32-25/1977-2; French edition CP 32-25/1977-2F.)

This second volume of the Inquiry findings sets out the terms and conditions in the event a pipeline and energy corridor is established. The volume is organized to convey principally the social and economic concerns of the people (Part I), the environment and land (Part II), and the nature of the project itself (Part III). Of social relevance particularly is Part I where concerns and values are described in terms of: the nature/extent of development, renewable resources, employment and manpower, "action communities", northern business, and transportation.

515. Berry, John W.  
1975 Acculturative Stress Among James Bay Cree: Prelude to a  
CAN Hydroelectric Project in Northern Quebec, Canada,  
15 pages.  
Boreal Institute for Northern Studies, The University  
of Alberta, Edmonton, Alberta. Occasional Publication  
Number 14, January 1978.  
Also published in Consequences of Economic Change in  
Circumpolar Regions, edited by L. Müller-Wille, et al.  
Boreal Institute for Northern Studies, University of  
Alberta, Edmonton, Alberta, 1975.

As a prelude to the James Bay Hydro project, this paper describes the monitoring of expected psychological adaptation and "acculturative stress" of the Cree in response to the initiation of the project. The research design for this monitoring is briefly described, but the remainder of the paper focuses on findings. These are presented, and then discussed and interpreted, principally in terms of stress effects, and feelings of marginality. The paper emphasizes that these are anticipated consequences of the James Bay project, and states the need for longitudinal work which can effectively research changes.

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516. Canada. Environmental-Social Committee, Northern Pipelines,  
1974 Task Force on Northern Oil Development.  
CAN Mackenzie Valley and Northern Yukon Pipelines:  
Socio-economic and Environmental Aspects, 197 pages.  
A report to the Task Force on Northern Oil Development,  
Government of Canada, (Information Canada Cat. No.  
R57-7/1974), Report Number 74-17, June 1974.

"This report is concerned with the people, the natural environment and resource use in the Mackenzie valley and the northern Yukon and how these aspects might be affected if pipelines were built to move natural gas or oil to southern markets. It is based on studies for the Environmental-Social Committee of the Task Force on Northern Oil Development since 1971, together with related information from other government and non-government studies, papers and reports."

"There are four main parts to this report. The first is an outline of proposals for developing northern pipelines and the study program that resulted from these proposals (Chapters A and B). Next is a description of the current setting of the natural environment (Chapter C), the people (Chapter D) and resource use (Chapter E) in the study area. The third main section discusses the implications for the study area of a decision to construct a gas or oil pipeline in the Mackenzie valley and northern Yukon (Chapter F). The final part (Chapter G) summarizes the main conclusions and recommendations from studies carried out under the Environmental-Social Program."

517. Canada. Mackenzie Valley Pipeline Inquiry.  
1975/6 Summaries of Proceedings. Volume 4: Community Hearings,  
CAN April 1975 - August 1976; Volume 5: The Human  
Environment - Social and Economic Aspects: A  
Regulatory Agency, Yellowknife, N.W.T., April-  
October 1976; Volume 6: Final Arguments, Yellowknife,  
N.W.T., November 1976.  
Department of Indian and Northern Affairs, Ottawa, Ontario.

Volumes 4, 5 and 6 are those reports of the Inquiry findings which are relevant to social or socioeconomic aspects of the pipeline project. They are 3 of a series of 6 volumes which record Inquiry proceedings, most with actual transcripts included. The others deal with: Construction and Engineering (Volume 1); Physical and Living Environments (Volume 2); and, Mackenzie Delta and Beaufort Sea (Volume 3).

Volume 5 should be the principal report of interest in terms of social dimensions of impacts. The volume is intended as a guide to the transcripts themselves, as is the case with the whole series. As such, information is organized by transcript volume or hearing. Within each, there are several dimensions of impacts touched upon

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and identified with sub-titles. Aboriginal rights, health care, education and alcohol are examples of social issues raised in the hearings.

Similarly, Volume 4 is a guide to the Community Hearings of the Inquiry, intended to be informal hearings without cross examinations. This volume also highlights the transcripts, and proceedings are organized according to the hearing locale--N.W.T. communities, Yukon communities, and southern communities. Volume 6 records the highlights of final arguments of participants filed in the last week of hearings. Social aspects are prominent in these and appear in the arguments of participants such as the Mental Health Association of the N.W.T. and the N.W.T. Association of Municipalities.

518. Canada-Manitoba. The Lake Winnipeg, Churchill and Nelson Rivers  
1974 Study Board.  
CAN Appendix 8 - Social and Economic Studies. Volume 1:  
Social and Economic Impact Study of the Lake Winnipeg,  
Churchill-Nelson Rivers Hydro Development, 490 pages.  
Prepared by J. D. Collinson, et al., The Social and  
Economic Impact Study Team, Planning Branch, Manitoba  
Department of Mines, Resources and Environmental  
Management, Winnipeg, Manitoba, June 1974.

This study on the social and economic impacts of the Nelson River Hydro-electric Development Project on northern Manitoba communities was done when construction on some portions of the project had already begun. The effects of the hydro-electric project on employment, wage rates, transient population, trade, accessibility, mobility, and communications, in social and economic terms, were assessed in order to consider and propose means to ameliorate undesirable impacts on residents of communities in the area. As well, means were examined by which residents could obtain greatest benefit from the social and economic opportunities resulting from construction of works and associated development. An important premise of the study is that the effectiveness of community decision-making processes and two-way communication mechanisms will significantly determine the impacts of hydro-electric development.

Chapter I contains conclusions and recommendations on northern development in general and hydro-electric development in particular, in addition to a summary of anticipated impacts and recommended mitigation options for each community. Chapters II and III describe the hydro-electric project and the study team's approach. The Social and Economic Overview in Chapter IV summarizes general impacts and changes in northern communities. Chapter V analyzes in depth the economic and social impacts on the communities of Cross Lake, Nelson House, South Indian Lake, Norway House, Split Lake, York Landing, Lower Churchill River, Thompson, Leaf Rapids, and Lake Winnipeg.

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519. Canada-Manitoba. The Lake Winnipeg, Churchill and Nelson Rivers  
1973/74 Study Board.  
CAN Appendix 8 - Social and Economic Studies, Volume 2,  
about 600 pages.  
Prepared by J. D. Collinson, et al., The Social and  
Economic Impact Study Team, Planning Branch,  
Manitoba Department of Mines, Resources and Environ-  
mental Management, Winnipeg, Manitoba. June 1973/  
June 1974.

This volume consists of three parts: (1) Cross Lake Community Profile; (2) Nelson House Community Profile, two communities which were examined in Volume 1 (see item 518) and are here discussed in greater depth; and (3) the social and economic impact of the Nelson River Hydro Development project, with particular emphasis on the community of South Indian Lake.

520. Canada-Manitoba. The Lake Winnipeg, Churchill and Nelson Rivers  
1972-74 Study Board, Winnipeg, Manitoba.  
CAN Appendix 8 - Social and Economic Studies, Volume 3,

This volume is a collection of 8 papers by various authors on the socioeconomic impacts of development in the North, written over a period of three years. (It is part of the same series as items 518 and 519).

J. T. Milord and R. P. Perry. Social change and stress: A focus on northern development, 97 pages. June 1974.

J. D. Collinson, et al. A proposal for a northern Manitoba native cultural centre or museum, 22 pages. June 1974.

J. D. Collinson, et al. The impact of development on nutrition in remote northern Manitoba communities, 143 pages. June 1974.

J. D. Collinson, et al. Simulation of alternatives for the South Indian Lake commercial fishery, 180 pages. March 1974.

Acres Consulting Services Ltd. Report on Indian Affairs Branch Human Resource Survey, 8 pages. November 1972.

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Acres Consulting Services Ltd. Report on socio-economic data sources for selected northern Manitoba communities, 40 pages. November 1972.

Nesbitt Educational Enterprises Ltd. Social Impact Program, 20 pages. January 1973.

Acres Consulting Services Ltd. Literature review: Socio-economic impact pertaining to native people, 87 pages. February 1973.

521. Interdisciplinary Systems Ltd., Winnipeg, Manitoba.  
n.d. Executive Summary: Effects of Exploration and Develop-  
(c. 1977) ment in the Baker Lake Area. Volume 1: Study Report,  
CAN 11 pages.  
Prepared for Canada Department of Indian Affairs and Northern Development, Ottawa, Ontario, and published as a Communiqué.

"Since 1969, Baker Lake residents have expressed concern about the effects of mineral exploration activities on renewable resources, particularly caribou, sustaining their community. Responding to these concerns, the Minister of Indian and Northern Affairs in March 1977 issued a temporary 'halt' on land-use activities in a 78,000 km<sup>2</sup> (30,000 mi<sup>2</sup>) area around Baker Lake and announced that a study into the potential effects of exploration activities in the area would be undertaken.

This report presents the results of that study. It examines renewable resource harvest, biological characteristics of fish and wildlife species supporting this harvest, industrial exploration and development, and potential impacts of industrial activities on harvested species. It also identifies areas regarded as critical for maintaining traditionally harvested populations and presents recommendations on special controls or prohibitions for industrial activities in each critical area."

522. Lanari, R., with the collaboration of R. Castonguay.  
1976 Study of the Social Aspects Found in The Berger Hearings  
CAN Transcripts: Native Employment and the Mackenzie  
Valley Gas Pipeline Project, 82 pages.  
Prepared for Mr. H. Morrisette, Chief, Northern Research Division, Ottawa, Ontario. March 1976.

The report studies the transcripts from the Berger Inquiry Hearings and examines the socioeconomic impact studies carried out in the Mackenzie Valley region. The work was conducted to help develop a research program to assess the socioeconomic impact of an Arctic

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Island Gas Pipeline. The transcripts were examined to gain insight into native attitudes and perceptions, and the impact studies were reviewed to learn about researchers' perceptions and conclusions. The two are compared to assess the effectiveness of the studies in evaluating socioeconomic impacts. This report is concerned only with impacts related to employment during construction and operation of the pipeline.

523. Lysyk, Kenneth, Edith E. Bohmer, and Willard L. Phelps.  
1977 Alaska Highway Pipeline Inquiry, 171 pages.  
CAN Submitted to the Minister of Indian Affairs and Northern  
Development. (Supply and Services Canada Cat. No.  
CP 32-31/1977).

This is a comprehensive report on the social and economic impacts expected to result from the construction of the southern Yukon gas pipeline. This includes a consideration of attitudes of Yukoners on the project. The volume describes the background and components of the project itself, alternative routes identified, and employment and training for the project. Anticipated economic and social impacts are described, as well as the issues and impacts associated with the Yukon Indian land claim. Impacts to the immediate geographic area within which the pipeline would be situated are also considered in terms of the wilderness and wildlife, the people, and economy. Finally, recommendations with respect to a planning agency and regulation for the pipeline project, as well as compensation measures, are outlined. Specific recommendations, regarding, for example, land claim and alternative routes, are noted in their respective sections.

524. Saskatchewan. Churchill River Study (Missinipe Probe).  
1976 Churchill River Study: Synthesis, 215 pages.  
CAN Available from Saskatchewan Department of the Environment,  
2025 Victoria Avenue, Regina, Saskatchewan S4P 0S1.  
Technical Report.

The overall study was initiated out of an interest in the area for hydro-electric energy generation, and for recreational use. The complete Churchill River Study (CRS) publications (Appendix A) consist of 31 Final Reports, the Synthesis or Technical Report, a Summary Report, and various other publications.

"The Synthesis integrates the most important findings of the Churchill River Study Sectors, which are given more fully in the Final Reports. The findings are presented in a sequence that allows for a description of present environmental conditions to precede the predictions of the impacts which the building of the proposed Wintego dam would have on that environment.

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The Summary of Findings at the beginning of the Technical Report provides a synopsis of the entire Churchill River Study. It is followed by a Condensed Impact Statement. In Chapter 1 the reader becomes familiar with the regional setting, the proposed development, and the reasons for having undertaken the Churchill River Study. Chapters 2 through 10 describe the existing natural and human environment of the study area. Details of the proposal by the Saskatchewan Power Corporation are presented in Chapter 11. The final chapter, Chapter 12, discusses the potential effects of the proposal on the local people and the natural environment."

Included in that discussion is a consideration of impacts on tourism and recreation, and economic and social impacts.

525. Thompson, Andrew R., Commissioner.  
1978      West Coast Oil Ports Inquiry: Statement of Proceedings,  
CAN      156 pages.  
            West Coast Oil Ports Inquiry, 549 Howe Street, Vancouver,  
            B.C. V6C 2C6. February 1978.

This report will be used to guide future decision-making regarding oil port needs as the original proposal signalling the need for the Inquiry was cancelled. At the time this document was transmitted, there was in fact a serious application for an oil port. The volume reviews Inquiry proceedings until the hearings were terminated; the hearings were to deal with environmental, social and navigational safety aspects of a proposed oil port. In the proceedings themselves, socioeconomic impacts are treated only briefly in a specific manner. Social implications of an oil port, and social values and perspectives are, however, woven throughout the report. Findings, substantially technical, are organized to answer: "what people have told the Inquiry"; "what the Inquiry has learned"; and "where do we go from here". Explanations as to the nature of the Inquiry itself and jurisdiction/regulation of tankers are also provided.

### Sociocultural Implications

See also item 504.

526. Berry, J. W.  
1971      Psychological research in the North.  
CAN      Anthropologica, N.S. Volume XIII, Numbers 1-2, pages 143-157.  
            Canadian Research Centre for Anthropology, Saint Paul  
            University, Ottawa, Ontario.

## V, NORTHERN DEVELOPMENT

Selective research studies with native peoples conducted by psychologists, psychiatrists and anthropologists are reviewed in this article. Studies are reviewed under the headings of cognitive skills, attitudes, personality and psychological effects of cultural contact and social change. Key findings and types of studies are described for each. Perceptual and intellectual abilities are included in the first section; attitudes, values and motives in the second; and the "northern personality" in the third. The fourth section deals with changes in some of these areas during acculturation. The role and responsibility of the psychologist in northern development is also discussed.

527. Butler, Richard.

1975      The Development of Tourism in The Canadian North and  
CAN      Implications for the Inuit, 112 pages.  
Inuit Tapirisat of Canada, Ottawa. Renewable Resources  
Project, Department of Geography, University of Western  
Ontario, London, Ontario.

Tourism is placed in this report in the context of the Canadian North. The salient features of the industry in the North presently, and future tourism developments and patterns, are the central objectives of the report with particular emphasis on the Inuit and their traditional activities. The industry is described in terms of tourist motivation, the development of tourism, tourist appeal of the North, and limitations and problems. Weaving together these dimensions, an overall situation analysis is also given. Future patterns (e.g., tourism demand, development of facilities, tourist activities) are outlined, as are the implications of these patterns for the Inuit. Conclusions discuss the involvement of the Inuit in the tourist industry.

528. Crassweller, Ken.

1974      Arctic New Towns: Social Implications, 42 pages.  
CAN      School of Regional and Community Planning, University  
of British Columbia, Vancouver, B.C. August 1974.  
Prepared for The Department of Indian and Northern Affairs.

This study, made in connection with a study sponsored by the University of British Columbia and the Department of Indian and Northern Affairs, is based on the idea that what is "happening in established arctic settlements may highlight the social implications that should be considered by decision-makers addressing themselves to problems in new towns". The author, after informally interviewing over 65 persons during a 5-week period in Pangnirtung, Igloodik, and Pond Inlet on Baffin Island, describes and often

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compares the philosophies, characteristics, traditions, attitudes and preferences of the Inuit and the "white", in the aspects of the cultural, social and work environment, i.e., employment, housing, family, installations, life stage, local government, and living patterns. From the social implications outlined in the study, Crassweller makes several suggestions which may help decision-makers to resolve problems in new towns, e.g., the Strathcona project.

529. Salisbury, Richard F., Nathan Elberg, and Robert H. Schneider.  
1974      Development? Native Attitudes and Perceptions in the  
CAN      Mackenzie District, about 100 pages.  
            Programme in The Anthropology of Development, McGill  
            University, Montreal, Quebec, October 1974.  
            Submitted to Department of Indian and Northern Affairs.

This study sets out to express in quantitative terms what native attitudes are with respect to development. The goal of the study is to make comprehensible to non-native people the structure of attitudes regarding future development and to show what attitudes current or past development has already affected. The paper is a comprehensive treatment of native attitudes as expressed in Native Press, "translated" in concepts and terms from social science and also in terms used by laymen. Study approaches and research methodologies are also described.

### Other Related Items

- I.      122.
- II.     217, 227.
- III.    352.
- IV.    401, 408, 409.
- V.      501-529.
- VI.     —
- VII.    707.
- VIII.   805.

## VI. MAN-ENVIRONMENT INTERACTIONS

All of the references in this category are concerned, in one way or another, with how man relates to his environment. That a great deal of research is being done on man's perceptions, attitudes, and behaviour vis-à-vis the natural environment is obvious. Judging from the material received, however, there appears to be little overlap between the work of geographers, psychologists, sociologists, and others. Nonetheless, there are some recent signs that the concepts developed by different disciplines are beginning to cross boundaries, and that future research may well be of a more transdisciplinary nature.

State of the Art is quite a small section, reflecting the youthfulness of the "art". These references deal with scenic assessment and environmental perception research. It is in Conceptual Frameworks that some signs of a future integration between disciplines are discernible. Included here are papers which propose new or different ways of thinking about the environment and about man-in-the-environment; these have a methodological or philosophical orientation. The interface between attitudes-and-behaviour and the environment is also explored.

Most of the items under Methodologies describe, develop, or assess techniques for measuring environmental perceptions and preferences, with emphasis on scenic beauty. Simulations (Gaming) consists almost entirely of accounts of laboratory simulations of how people manage (or mismanage) resources, in different situations and under varying conditions. Man's behaviour toward the environment is also implicit in several of the items under Attitudes and Perceptions. The attitudes and perceptions of both small and large groups are reported, ranging from such issues as pollution and land use to natural hazards and the quality of the environment.

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### State of the Art

See also items 606, 608.

601. Arthur, Louise M., Terry C. Daniel, and Ron S. Boster.  
1977 Scenic assessment: An overview.  
AM Landscape Planning 4, pages 109-129.

This overview of management tools developed to evaluate scenic beauty describes the state of the art for researchers, students, and practitioners in public resource management. The literature on scenic assessment methodologies is grouped into 3 categories: descriptive inventories, public preference models, and economic aspects of aesthetic measurement. Both quantitative and non-quantitative methods are examined. The strengths and weaknesses of general approaches are noted, and some alternatives suggested. Methodological soundness and utility of the evaluative techniques for scenic resource management are the main criteria used in assessing the various techniques.

602. Craik, Kenneth H. and Ervin H. Zube, editors.  
1976 Perceiving Environmental Quality: Research and  
AM Applications, 310 pages.  
Plenum Press, New York and London.  
A summary of the workshop results, prepared by the editors, appeared as Issues in Perceived Environmental Quality Research, Institute for Man and Environment, University of Massachusetts, Amherst, November 1975, 78 pages.

The editors report on a series of research workshops on environmental perception and its place in a comprehensive system of indices for assessing and monitoring trends in environmental quality. The workshops had four specific objectives: (1) to define the state of the art of environmental perception research and identify salient conceptual and methodological issues; (2) to identify potential uses of perceived environmental quality indices (PEQIs) and related issues in policy development; (3) to identify the types of research needed to assess the adequacy of PEQIs; and (4) to outline a realistic pragmatic research strategy related to potential uses and identified policy issues. The three thematic workshops examined scenic and recreation environments; residential and institutional environments; and air, water, and sonic environments. The fourth critically reviewed their findings. Participants included leading

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researchers in environmental perception and potential users of PEQIs. The state of the art review papers prepared for discussion at the workshops are included in the volume. Terry C. Daniel, Robert O. Brush, and George L. Peterson each prepared papers on PEQIs in scenic and recreational environments. Papers on air, water, and sonic environments were written by Mary L. Barker, Robert E. Coughlin, and Neil D. Weinstein. The papers by the editors summarize and integrate the concepts and issues raised by the contributors and workshop participants.

603. Saarinen, Thomas F.  
1976 Environmental Planning: Perception and Behavior, 262 pages.  
AM Houghton Mifflin Company, Boston.

Decisions to change or modify the environment are based not so much on the environment as it is but on the environment as it is perceived. Increased pressure on resources and greater mobility have led to a situation where the "reality worlds" of different groups are increasingly coming into conflict. An understanding of peoples' environmental perceptions and behaviours is therefore essential to environmental decision-making. This book serves as a concise survey of this growing interdisciplinary field, ranging from personal space and room geography to images of the world and western attitudes toward nature.

Chapters 6 to 10 are of particular interest in the context of this bibliography. The contributions of different disciplines to the field are described at the level of the region, the nation, and the world. Natural hazard research, cognitive anthropology, wilderness perception research, landscape preferences, and the American environmental movement are among the subjects covered. Each chapter ends with a summary and extensive notes. Research approaches and findings are discussed. The studies selected are oriented both to theoretical issues and to the development of guidelines for practical problems. The final chapter discusses some of the common themes in the different disciplines and suggests some directions for the future.

### Conceptual Frameworks

See also items 631, 635, 639, 640, 642.

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604. De Long, A.  
1977 Conceptual evolution and design: The potential  
AM manipulation of spatial scale and time-frame.  
Evolutionary Environments, School of Architecture,  
University of Texas at Austin, Edition 4, March  
1977, pages 2-8.

The author cautions the reader that this paper is entirely hypothetical in nature. After stating three underlying assumptions which are premises for his argument, he develops the following positions: (1) A decrease in spatial scale leads to a decreased experiential time-frame, which leads in turn to an increase in potential experience per unit of real time. (2) An increase in experience-within-a-system leads to instability in that system and the generation of behavioural deviation, which leads to increasing complexity, requiring an increase in conceptualization to reintroduce stability via the design of a higher-order system. (3) Human beings possess the capability of inhabiting scale environments, and of being integrally affected by their experiences in those environments. This development includes methods, data, and mathematical treatment. The author develops the implications of these points for design.

605. Ittelson, William H., et al.  
1975 Toward a Theory of Environment, Behavior and  
AM Experience, 209 pages.  
Environmental Psychology Program, The City Uni-  
versity of New York. Working Papers.

This collection of ten working papers by William H. Ittelson, Timothy O'Hanlon, Karen A. Franck, and Charles T. Unseld spans a period of four years, from 1971 to 1975, though most date from 1974 and 1975. Some of the fundamental questions here considered are: the definition of science, the relation of science to technology, and the nature of human experience, in other words, the relations between knowledge, action, and experience. The papers are generally characterized by the view of man and environment as mutually dependent subsystems. While the built environment has been the primary focus of environmental psychology, most of these papers address themselves to the environment in its broadest sense. Attitudinal and methodological issues are an important concern.

Ittelson. Some issues facing a theory of environment and behavior.  
Ittelson/Franck/O'Hanlon. The nature of environmental experience.

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Ittelson/O'Hanlon. Behavioral science and the rationalization of architectural design.

Ittelson. Notes on environmental change.

O'Hanlon. Points to ponder for the technologist and the scientist.

O'Hanlon. Three reconstructions of the history of the sciences.

Franck. The relationship between theory and observation.

Unseld. Transactionalism: A theoretical and empirical perspective for environmental psychology.

Ittelson. Conceptual models for the generation of information.

Ittelson. Behavioral science and the environment.

An extensive reference list is included.

606. Proshansky, Harold M., William H. Ittelson, and Leanne G. Rivlin,  
1976 editors.  
AM Environmental Psychology: People and Their Physical  
Settings, 632 pages.  
Holt, Rinehart and Winston, second edition.

This collection of forty-three papers aims to provide the reader with a representative selection of detailed, up-to-date readings in environmental psychology. Unlike the first edition (1970) which set out to introduce a newly emerging field to specialists in related areas, this edition addresses issues more relevant to the development of a mature field. Thus the development of a theoretical framework appropriate to the problems of environmental psychology is an important focus. While the majority deal with the built environment, a number of papers treat the natural environment and several explore ideas and issues relevant to any type of environment. Some of these are:

Irwin Altman (1973). Some perspectives on the study of man-environment phenomena.

Garrett Hardin (1968). The tragedy of the commons.

William H. Ittelson (1973). Environmental perception and contemporary perceptual theory.

William H. Ittelson (1974). Some issues facing a theory of environment and behavior.

Robert W. Kates (1975). Experiencing the environment as hazard.

Samuel Z. Klausner (1971). Recreation as social action.

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David Lowenthal (1968). The American scene.

Rudolf H. Moos (1973). Conceptualizations of human environments.

Harold M. Proshansky (1976). Environmental psychology: A methodological orientation.

Susan Saegert (1976). Stress-inducing and reducing qualities of environments.

607. Rapoport, Amos.  
1978 On the Environment and the Definition of the Situation,  
AM 18 pages.  
School of Architecture and Urban Planning, The University of Wisconsin-Milwaukee, P.O. Box 413, Milwaukee, Wisconsin 53201. April 1978.  
Presented at EDRA 9 Conference, Tucson, Arizona.

The effects of particular environments on people vary according to context, culture, subjective interpretation, and so on, and can be direct or indirect. This paper examines only indirect effects. The environment can be seen as a form of non-verbal communication, in providing cues whereby people judge or interpret the social context or situation. But the cues must be noticed and the "language" or "code" shared if the environment is to be understood. When the environment is understood, people can behave appropriately in the setting and its corresponding social situation, though the cues may not necessarily be obeyed. This has implications for designers.

The author explores the usefulness of the sociological model broadly known as symbolic interactionism and suggests that, together with ideas on non-verbal communication, it offers one way of understanding how people interpret social situations via the environment and adjust their behaviour. Concepts from several disciplines are used to examine the behaviour-environment interaction, with the focus on behaviour.

608. Winkel, Gary H.  
n.d. The Role of Ecological Validity in Environmental  
(c. 1977) Research, 12 pages.  
AM Graduate School and University Center, City  
University of New York, 33 West 42 Street,  
New York, N.Y. 10036.

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This is a critical assessment of methodology in environmental research. Due to the multidisciplinary nature of the field, a variety of research approaches has been used but useful and consistent criteria for the generation and evaluation of knowledge are lacking. Three general traditions in environmental research each give some very different answers to important methodological and theoretical questions, and the criteria for the assessment of theoretical statements advanced by philosophers of science are not generally thought to be relevant to the assessment of methodology. The author argues that questions of methodology cannot be separated from theoretical issues: "the desiderata appropriate to theory are translated directly into the types of methodologies that are assumed to yield information which can be fashioned into a theoretical system", and similarly, the research approach may determine the form and content of theory. The author proposes the notion of ecological validity as a conceptual framework with which to evaluate differing methodologies, and discusses it in the context of various epistemological criteria for the generation of knowledge suggested by methodologists, e.g., internal validity, external validity, constructs, the situation-setting, and predictive-evaluative ability.

609. Wohlwill, Joachim F.  
1977      Perceptual and Attitudinal Aspects of Land Use: The  
AM      Case of the California Coastal Zone, 22 pages.  
The Center for the Study of Environmental Policy,  
The Pennsylvania State University, University Park,  
Pennsylvania. Working Paper 36.

This working paper deals with two subjects. First, it reviews the events which led to the emergence of the California Coastal Zone Commission. In its detailed plan for the future management of the coastal zone in 1975, the Commission gave explicit recognition to aspects of an environmental-aesthetic nature, which are discussed in the remainder of the paper. The author reviews the research evidence that relates to the assumptions underlying the Commission's recommendations and, more generally, the effective impact of particular forms of the built environment when placed in natural settings such as coastlines or other scenic areas.

The author presents a schema which depicts perceptual, attitudinal and behavioural responses to scenic areas as a multi-determined process. The aesthetic impact of an area; social, economic, and political influences; the use made by the individual of the resource; and the use made by society at large can be considered as both determinants and consequents of one another. Three hypotheses arising out of these relationships are proposed. Research is needed to relate the use that individuals make of an area to their attitudes toward regulation and control, and to their evaluative responses.

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### Methodologies

See also items 601, 602, 605, 608, 637, 641.

610. Arthur, Louise M.  
1977 Predicting scenic beauty of forest environments: Some  
AM empirical tests.  
Forest Science, Volume 23, Number 2, June 1977,  
pages 151-159.

This study tests the utility for aesthetic prediction and management of forested landscapes of 3 approaches to scenic component description: scaling of manageable features, design inventories, and timber cruises, using the criteria of the effectiveness of each set of descriptors in explaining people's scenic beauty evaluations, and the strength of relationships between scenic beauty descriptors and forest management descriptors. Methodology and results are discussed. While the timber cruise model proved the most effective and efficient in predicting public preferences and managing forests for increased aesthetic benefits, all prediction models explained substantial portions of perceptual preferences. The author concludes that the effective prediction of scenic preferences and their use in forested landscape management is well within the scope of available technology, and that the general approach here outlined will likely be applicable to scenic management in a variety of natural, and possibly also man-made, environments.

611. Canada/MAB.  
1976 Methods and Interpretation of Environmental Perception  
CAN/ Research, 136 pages.  
INT. Canadian MAB Programme Secretariat, Liaison and Coordination Directorate, Dept. of the Environment, Ottawa, Ontario K1A 0H3. Report No. 9. May 1976. Bilingual. Report of a Workshop sponsored by the Canadian, United States and Mexican Committees for Man and the Biosphere, at University of Victoria, B.C., Canada.

The UNESCO program on Man and the Biosphere (MAB) identified the perception of environmental quality as a major integrating aspect of the program, formally called Project 13. A workshop was held to explore the uses and usefulness of various methods and interpretations of perception research, with the aim of helping countries integrate environmental perception research into other MAB projects. The workshop concentrated on two problem areas, namely, perceptions of environmental hazards (natural and man-made) and perception of quality in urban environments. Two other areas receive some

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attention: the perception of environment in isolated or peripheral ecological areas and developing and improving comprehensive environmental policy planning models.

This report on the workshop describes a number of techniques which may be used for the identification of environmental perception and attitudes and those which workshop participants used. This is followed by an assessment of the experience gained. It is stressed that the evaluation of research techniques reflects workshop discussions and does not necessarily have any authority or weight beyond that. Suggestions for future MAB activities in the field of environmental perception research conclude the report. The appendices include: a list of Reports on MAB Activities and Related Environmental Perception Research and Contributed Papers, a detailed description of various instruments tested by participants, a summary of perception studies relating to MAB projects in various countries, a critical evaluation of the workshop by a participating environmental and clinical psychologist, and a selected bibliography (over 40 references).

612. Daniel, Terry C., principle investigator.  
1976 Prediction of Scenic Quality from Manageable Forest  
AM Landscape Features, 50 pages.  
The University of Arizona and the Rocky Mountain Forest  
and Range Experiment Station, Forest Service, U.S.D.A.,  
July 1976. Final Report.

The principle objective of the three research papers included in this report was to develop models for predicting the perceived scenic quality of forest landscapes from information about the physical characteristics of the landscape. The Scenic Beauty Estimation (SBE) method is used.

The first paper, by Louise M. Arthur, "Predicting Scenic Beauty by Manageable Forest Landscape Features", aims to: (1) develop a list of manageable landscape features that can be used by landscape architects and others to predict the scenic quality of feasible management alternatives; and (2) investigate the relationship between the identified landscape quality features and routinely collected forest inventory data.

The paper by Herbert W. Schroeder and Linda M. Anderson, "Graphic Manipulation of Manageable Forest Landscape Features", investigates a technique for graphically manipulating scenically relevant landscape features identified by Arthur.

"Scenic Beauty Impact of Harvest Related Alterations in Two Southwestern Forests" by Lawrence (Terry) Wheeler III evaluates the effects of post-harvest vegetative recovery on the scenic value of two different forest stands.

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613. Daniel, Terry C. and Ron S. Boster.  
1976 Measuring Landscape Esthetics: The Scenic Beauty  
AM Estimation Method, 66 pages.  
USDA Forest Service, Rocky Mountain Forest and Range  
Experiment Station, Fort Collins, Colorado 80521.  
May 1976. Research Paper RM-167.

The Scenic Beauty Estimation (SBE) Method is here described and validated by extensive experimentation and testing with user, interest, and professional groups. It measures public "perceptual preference" for various landscapes and is based on the contention that scenic beauty judgements result from the interaction of observer perception and observer standards. The SBE Method was found to meet commonly accepted criteria applicable to any measurement system very well. As a reliable and valid measure of perceived scenic beauty, the SBE index is applicable to a wide range of forest and wildland management problems and can be used to predict the aesthetic consequences of alternative land uses. Though still in experimental and developmental stages, results thus far indicate that extensions and modifications of the SBE Method offer potentially useful design, planning, and management tools for multiple-use forest management.

614. Daniel, Terry C., et al.  
1977 Mapping the scenic beauty of forest landscapes.  
AM Leisure Sciences, Volume 1, Number 1, pages 35-52.

Map-overlay techniques have been used for some time in order to simultaneously consider a number of variables in a land-management problem, and recent advances in remote-sensing and computer-mapping technology have greatly increased the power and flexibility of the method. However, intangible resources, such as recreation and aesthetic quality, have yielded less well to these technologies, and are often considered essentially qualitatively and only after management decisions have been made mainly on the basis of requirements for more tangible resources.

The paper describes a method for developing maps of the scenic beauty of forests, which can then be integrated with other map-overlays. The Scenic Beauty Estimation (SBE) Method is used to obtain quantifiable values. The reliability and validity of the procedure is discussed and the relationship between the scenic beauty map and maps of physical forest features investigated.

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615. Hendee, John C., Richard P. Gale, and William R. Catton, Jr.  
1971 A typology of outdoor recreation activity preferences.  
AM The Journal of Environmental Education, Volume 3,  
Number 1, Fall 1971, pages 28-34.

The authors discuss several conceptual frameworks for the study of outdoor recreational activities. Most of these have been based on observed or self-reported activities, but observed activity is not necessarily preferred activity; many variables may limit the extent to which the actual approaches the preferred. The observation method should be integrated with studies of recreationists' preferred activities to be fully meaningful. A new conceptual typology is presented, based on the activity preferences of 2400 users of 33 recreation sites. The effects of age and education on activity preferences are discussed. The relationships between biological (e.g., age) and social (e.g., education) determinants of outdoor recreation as well as recreation tastes and preferences need further research to increase their usefulness in predicting future participation in outdoor recreation and the need for facilities.

616. Palmer, James F.  
1978 An investigation of the conceptual classification of  
AM landscapes and its application to landscape planning  
issues.  
Priorities for Environmental Design Research, EDRA 8,  
edited by Sue Weidemann, James R. Anderson, and Roger  
L. Brauer, pages 92-103.  
Environmental Design Research Association, L'Enfant  
Plaza Station, P.O. Box 23129, Washington, D.C.  
20024.

Designers, planners, and resource managers need to be aware of the conceptual way in which people organize the landscape based on visual information, for such activities as resource inventories and land-use zoning. However, an adequate classification system for this visual resource has not yet been found. Studies of the visual resource are relatively few and usually compare appraisals of visual attractiveness; a few have investigated attributes other than attractiveness which are also important to the character of the landscape. These studies reveal the presence of variation among views but have contributed little in terms of the conceptual organization for that variation.

The author proposes a new approach which is sensitive to these and other shortcomings. Three experiments are described. The first concerns the development of a conceptual landscape classification.

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The findings suggest that observers do organize visual landscape information conceptually and that the primary classes of this organization are widely shared. However, potential differences exist between landscape professionals and other participants. In the second stage, participants were asked to determine which of the primary conceptual landscape classes best described a number of unidentified landscape views. The extent of their agreement was significant enough to validate the classification. The third stage investigated the relation of scenic resource value to the conceptual landscape classification. The results provide an increased understanding of which physical and land-use dimensions contribute to visual landscape attractiveness. The paper concludes with a discussion of some of the implications of the conceptual classification for landscape planning issues such as the management of local scenic quality, the perception of regional character, and the relation of landscape perception to environmental legislation.

617. Saarinen, Thomas F.

1973 The use of projective techniques in geographic research.  
AM Environment and Cognition, edited by William H. Ittelson,  
pages 29-52.  
Seminar Press, New York.

The author begins by surveying the growing variety of psychological, especially projective, techniques used by geographers to study how man perceives his environment. This relatively new interest by geographers in the use of such techniques stems largely from the increasing acceptance of the hypothesis that man reacts to his environment as he perceives and interprets it in light of his previous experiences (cognitive behaviouralism). If a person's actions vis-à-vis the environment depend on his perception of it, it is important to find out how it is perceived. The majority of the article describes the methods and results of three studies conducted by the author. Of particular interest is the use of the TAT test among Great Plains wheat farmers to determine how they perceive the drought hazard and how this affects their use of areas subject to drought. Implications of the farmers' attitudes to and behaviour in a drought situation for future government policy are discussed. The author concludes with a brief assessment of projective techniques and urges a closer collaboration between geographers and psychologists.

618. Seeley, George W., compiler.

1977 Applications of Environmental Psychology in Arid  
AM Regions, 75 pages.

Symposium presented by students and faculty of the University of Arizona to the annual meeting of the American Association for the Advancement of Science, Southwestern and Rocky Mountain Division, Denver, Colorado, February 1977.

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This collection of 10 papers represents some of the many avenues of on-going research in environment and behavior at the University of Arizona. The first 5 papers deal with the scenic beauty of the natural environment, the development of measures of scenic beauty, and the uses and usefulness of research findings. The other 5 papers deal primarily with the urban or man-made environment, specifically the neighbourhood, water usage, park development, arid land communities, and the perception of environmental change. The papers relevant to this category are:

Terry C. Daniel. Public perception based assessment of esthetic resources: The Scenic Beauty Estimation Method.

Lawrence Wheeler III. The view from the desert: Flexibility considerations in the Scenic Beauty Estimation (SBE) Method.

Herbert W. Schroeder. Predicting the aesthetic quality of forest roads.

Linda M. Anderson. Predicting the scenic impact of an open-pit mine in southern Arizona.

William L. Towler. Hiker perception of wilderness in Grand Canyon National Park: A study of social carrying capacity.

A list of pertinent publications on the SBE method is given by Terry C. Daniel.

619. Sewell, W. R. Derrick and Ian Burton, editors.  
1971 Perceptions and Attitudes in Resources Management:  
CAN Selected Proceedings of a Symposium on the Role of  
Perceptions and Attitudes in Decision Making in  
Resources Management, 147 pages.  
Policy Research and Coordination Branch, Department of  
Energy, Mines and Resources, Ottawa, Ontario. Resource  
Paper No. 2. (Cat. No. En 36-505-2.)

This collection of 14 papers is arranged in 3 main sections: (1) concepts, theory, and techniques of perception research; (2) case studies on water and air quality issues at municipal, regional and national scales, which assess public perceptions and attitudes in relation to specific problems, solutions, and responsibilities; and (3) the problems and possibilities of public involvement in the resource planning process. The final paper offers an overview, summary, and conclusion. Public involvement means more than simply giving people a say in what kind of environment they will live in. Accurate assessment of public preferences and their incorporation into the management process are essential. This volume attempts to further this aim.

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620. Whyte, Anne V. T.  
1977 Guidelines for Field Studies in Environmental  
INT Perception, 118 pages.  
UNESCO in cooperation with SCOPE. MAB Technical Notes 5.

UNESCO's intergovernmental program on Man and the Biosphere (MAB) includes Project 13, "Perception of Environmental Quality." Since 1973, many attempts have been made to promote environmental perception research within MAB and incorporate it into other projects. Lack of awareness of available models and an unfamiliarity with the possibilities for systematic observation in the field have hampered the integration of a perception approach with field studies on man's interactions with various types of ecosystems. An ad hoc group of the Scientific Committee on Problems of the Environment (SCOPE) Project 7 undertook this methodological study to overcome these problems.

This report aims to fulfill two functions: (1) to describe alternative research methods for field investigations of environmental perception, with an assessment of their advantages and limitations for specific purposes and conditions; and (2) to provide a rationale and a description of the field of environmental perception in the context of man-biosphere relations and ecosystem management. Guidelines is designed as a practical document. The frameworks were chosen for their appropriateness to the MAB Program rather than their a priori theoretical validity. Examples, "strategy", and suggestions for further reading accompany the descriptions of different field methods. The design of field studies is also treated. Over 160 references are listed in the bibliography.

### Simulations (Gaming)

See also item 606.

621. Ben-Dak, Joseph D.  
1977 Gaming and simulation in the service of social  
AM impact assessment: An exploration.  
Methodology of Social Impact Assessment, edited by  
Kurt Finsterbusch and C. P. Wolf, pages 245-262.  
Dowden, Hutchinson & Ross, Inc., Stroudsburg,  
Pennsylvania. Community Development Series 32.

This paper focuses on gaming, simulation, and simulation-gaming in the context of social impact assessment. Gaming and simulation are discussed in terms of their main uses in social impact research, their necessary components, and their advantages, disadvantages,

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and costs. The author concludes that simulation-gaming holds more promise for social impact research than either gaming or simulation alone, in terms of precision and comprehensiveness. He lists eleven possible benefits of simulation-gaming, which should be considered as propositions to be tested by social impact research. More than fifty references are listed in the bibliography.

622. Cass, Robert C.  
n.d. Subdividing Communal Resources: A Social Trap Analysis  
(c. 1976) of Management Outcomes, 38 pages.  
AM University of Houston.

"A behavioristic analysis of social traps was applied to the problematic depletion of communal resources by using a computerized resource management game. The object of the game was to maintain the level of a reproducing resource, a pool of points, at exactly half its maximum capacity. In half the experimental conditions, the subjects shared the pool with others; in the other half, the subjects were assigned to mutually exclusive sections. Half the subjects in each of these conditions received current information about the supply of the resource and half did not. Six four-person groups of college students participated in each of the four experimental conditions. Subdividing the resource increased the supply, production, and harvest of the resource. Resource level information increased the production and harvest of the resource and was of greatest benefit to undivided groups. The results are connected to investigations of human territoriality and the conservation of residential electricity."

623. Edney, Julian J. and Christopher S. Harper.  
1978 Heroism in a resource crisis: A simulation study.  
AM Environmental Management, Volume 2, Number 4.

A simulation experiment in the form of a Commons Dilemma was conducted, where subjects had to harvest resources from a regenerating pool so as to maximize individual harvests without over-exploiting the pool. The purpose of the experiment was to test the influence of two variables--open communication and volunteer leadership--on group and individual behaviour. Conclusions: open communication before and during the game increased the number of heroic responses and helped prevent a social trap from developing. Groups with leaders were not significantly better at managing the resource pool than leaderless groups, but leaders as individuals were marginally more likely to act heroically than other group

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members. Possible explanations for these results and limitations of the experiment are discussed. The implication for real resource dilemmas is that discussion before and during consumption will be beneficial to individual consumers, but further research is required to determine the precise aspects of communication that are beneficial.

624. Edney, Julian J. and Christopher S. Harper.  
AM           The commons dilemma: A review of contributions from  
              psychology.  
              Environmental Management, to be published.

While commons dilemmas occur in diverse situations, until recently they have been studied primarily by agricultural economists. This review paper integrates the recent research on the commons dilemma in psychology, deriving from three separate sources: (1) game research, especially as an extension of the Prisoner's Dilemma; (2) territoriality vis-à-vis the management of resources; and (3) reinforcement under the topic of social traps. A number of the major studies in each area are described. The author concludes by assessing the theoretical and practical limitations of the psychological research on the commons dilemma.

625. Greenblat, Cathy S. and Richard D. Duke, editors.  
1975       Gaming-Simulation: Rationale, Design, and Applications.  
AM        A Text with Parallel Readings for Social Scientists,  
          Educators, and Community Workers, 435 pages.  
          Sage Publications, Halstead Press Division, John Wiley  
          & Sons.

Each of the four parts of this book includes two articles by Greenblat and Duke, followed by six or seven readings by various authors. Some of the readings were written specially for this volume; others are reprinted from other sources, and date from 1961 to 1974. In Part I, gaming-simulation is discussed as a mode of learning and communication. The design of games and their use as teaching and training tools are the focus of Parts II and III. Part IV examines the application and relation of gaming-simulation in a number of different fields, e.g., urban planning, economics, sociology, art. A comprehensive bibliography is included.

626. Harper, Christopher S.  
n.d.       The Use of Laboratory Simulations to Study Resource  
AM        Management Dilemmas, 6 pages.  
          Arizona State University, Tempe, Arizona.

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This short paper discusses some current resource management dilemmas, in particular, "harvesting" behaviour and the potential of laboratory simulation to examine various options and consequences. Simulation studies have already suggested specific methods of inducing efficient resource utilization in diverse situations. Field study techniques can be expensive, time-consuming, and even dangerous. Laboratory simulation is a simplified, inexpensive and relatively rapid way to study resource management problems; at the same time, it allows rigorous experimental control. Two simulations are discussed in greater detail: the commons dilemma and the social trap.

627. Harper, Christopher S.  
1978 Competition and cooperation in a resource management  
AM task: A social trap analog.  
Priorities for Environmental Design Research, EDRA 8,  
edited by Sue Weidemann, James R. Anderson, and  
Roger L. Brauer, pages 305-312.  
Environmental Design Research Association, Inc., L'Enfant  
Plaza Station, P.O. Box 23129, Washington, D.C. 20024.

A brief explanation of major gaming concepts--the tragedy of the commons, social trap, and the social trap analogy--is followed by a simulation of a social trap analog using small groups. A social trap framework is used to test the effects of two types of behavioural orientation (group cooperation vs. individual competition) and two levels of interaction (verbal communication permitted vs. prohibited) on the efficient use of a commonly-held resource. The study incorporates the principles of supply-demand economics. It was found that the opportunity to communicate helped groups avoid a social trap and to increase harvesting of the resource pool. Groups working cooperatively were substantially more successful at maintaining the resource pool and achieved a greater profit than groups of competing individuals. The author concludes that the methodology used can be a valuable technique for the study of resource management problems and that the social trap analog should be promoted as an aid for environmental planners.

628. Harper, Christopher S. and Barry Gold.  
n.d. The Role of Feedback in the Management of a Group Resource,  
(c. 1977) 20 pages.  
AM Arizona State University, Tempe, Arizona.

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A number of group resource management dilemmas occur because the prospect of short-term personal gains outweigh the vaguer prospect of long-term group loss. This paper examines, through a resource management simulation, the effect of various types of feedback on the management of a renewing resource. Small groups were given two types of feedback: (1) feedback on the amount of resources remaining (no feedback, factual feedback, or subjective feedback); and (2) feedback on the amount of resources selected during the previous trial (no feedback, factual feedback on group total, factual feedback on individual totals, or subjective feedback). Subjective trial-by-trial feedback caused a significant increase in points and resource pool replenishments. Factual feedback on resource level led to better management than no feedback or subjective feedback. The authors discuss the implications for alleviating several resource management dilemmas.

629. Schroeder, David A.  
n.d. The Social Trap Analog as an Experimental Game, 45 pages.  
(c. 1975) Department of Psychology, Arizona State University,  
AM Tempe, Arizona 85281.

This paper considers the social trap analog as an experimental game that offers a flexible methodological paradigm for the study of intrapersonal and interpersonal processes. Recent criticisms of the prisoner's dilemma game are reviewed and the advantages that the social trap analog offers are discussed. The author concludes that because the social trap analog permits more natural interactions to be studied in a realistic simulation (than the prisoner's dilemma game), study results have greater generality. It provides a new way of looking at conflicts which arise in decision-making situations, e.g., short-term vs. long-term consequences, individual vs. common goals. Suggestions for further research are offered.

### Attitudes and Perceptions

See also items 602, 603, 605, 606, 609, 615, 617, 618, 619.

630. Arthur, Louise M., et al.  
1977 Predator control: The public viewpoint.  
AM Transactions of the 42nd North American Wildlife and  
Natural Resources Conference, pages 137-145.  
The Wildlife Management Institute, Washington, D.C.

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Telephone interviews, using a representative probability sample, in the 48 contiguous states and the District of Columbia, were conducted to ascertain public attitudes towards predator control in general and coyote control in particular. These attitudes and other public concerns are reported here. The author discusses ways in which the information could be included in a control policy decision process. Briefly, the survey indicates the following: (1) an existing widespread interest in predator control; (2) concern for the impact of controls on non-target species; (3) greater concern for the humaneness of methods than for cost effectiveness.

631. Cheng, Jacqueline Ruth.

1978      Images of Banff and Canmore and the use of Banff National  
CAN      Park by motel visitors, 221 pages.  
Department of Geography, University of Calgary, Calgary,  
Alberta. Dissertation. May 1978.

The hypothesis of this study is that park visitors using motels in Canmore, outside Banff National Park, have a more restricted activity space in the park and more limited cognitions of what the park offers than visitors staying in Banff Townsite, Parks Canada's major visitor service centre. In fact, it was found that only the use of the townsite's central business core was significantly associated with the location of park visitors. Cognitions of the park and the activity space were similar for both Canmore and Banff guests, but Canmore guests used Banff's urban core less than Banff guests. Images of Banff and Canmore as places to stay affected locational decisions, and the author makes recommendations to improve Canmore's image. The study makes a methodological contribution to behavioural geography; it examines several behavioural parameters and shows the degree to which attitudes, perceptions, preferences, cognitions, and overt behaviour are interrelated.

632. Eatock, A.

1978      Public Perception Survey: Great Lakes Water Quality,  
CAN      Draft Report, unpublished, 28 pages.  
Prepared for Environment Canada, Centre for Inland Waters.

The purpose of this survey was to determine (1) whether the general public perceives any change in the water quality of the Great Lakes; (2) the use and usage of the Great Lakes by the public; and (3) the level of public awareness of government agencies and actions related to water quality management. Over 2500 "general public" residents of southern Ontario and 437 shore property owners were randomly selected and interviewed. Answers to the questionnaire are aggregated in a summary and also shown by group (shore property owners, public users, non-user public) and by geographic area.

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The author notes that the public is generally unaware of direct government measures to improve water quality; nonetheless a large proportion is either unsatisfied with existing regulation or with enforcement. Much of this dissatisfaction arises from lack of knowledge and the author stresses the need for an information program.

633. McPherson, H.J. and Thomas F. Saarinen.  
1977 Flood plain dwellers' perception of the flood hazard in  
AM Tucson, Arizona.  
The Annals of Regional Science, Volume XI, Number 2,  
July 1977, pages 25-40.

The perception of the flood hazard of 162 residents living within the 100 year floodplains of four rivers in the Tucson, Arizona area was analyzed. Interview results indicated that floodplain residents have no real appreciation of the flood danger and tend to minimize the extent of damage that might result from a severe flood. Solutions suggested by respondents were almost entirely of a technological nature, and they felt that the responsibility for controlling the flood problem is the government's. The implications of the low personal assessment of the flood danger, the faith in technological solutions, and the reliance on government are discussed. Resource managers and decision-makers will need to devise strategies to increase awareness of the risks of living in the floodplain as well as of the wide range of non-technological alternatives that provide some degree of protection.

634. Nieman, Thomas J.  
1978 Visual quality: The attitude and perception of coastal  
AM zone user groups.  
Priorities for Environmental Design Research, EDRA 8,  
edited by Sue Weidemann, James R. Anderson, and  
Roger L. Brauer, pages 83-90.  
Environmental Design Research Association, L'Enfant  
Plaza Station, P.O. Box 23129, Washington, D.C. 20024.

This article raises the question whether looking at the way our society feels about the visual quality of its surroundings will give us an insight into the relationship between specific environmental problems and alternative planning solutions. The author notes that while marketing experts, sociologists, and political scientists use sample surveys to test preferences and choices on a whole range of issues, environmental planners and decision-makers have not satisfactorily used this mechanism to determine public

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support or preferences. They have tended rather to rely on their own perception of what people ought to want or opinions they ought to hold.

The survey here described was designed to probe the extent of user perception and concern for the visual quality of the coastal zone along the Great Lakes in New York State, and the extent of their preference for an environment of high visual quality. Three types of users--full-time, part-time, and visitors--were identified.

Users overwhelmingly agreed that visual quality is an important factor in their lives; there was also agreement as to the more important problems on the coast that affect visual quality. However, important differences as to the intensity and the direction of the commitment to visual quality emerged between user types. The fact that three groups are making markedly different demands on the visual coastal environment leads to problems for coastal planners: "while they react to political pressures similar to those any other planning agency would face, the problem is exacerbated by heavy seasonal use and the relatively fragile ecological character of the coastal area".

There is increasing support for the position that social objectives should be considered the primary planning criteria rather than economic efficiency. This means that planners will no longer be able to restrict themselves to quantifiable criteria. However, the survey findings suggest that while visual quality and social objectives are integral parts of the planning process, it may be very difficult to reach consensus.

635. Passmore, John.

1974      Man's Responsibility for Nature: Ecological Problems and  
INT        Western Traditions, 213 pages.  
            Gerald Duckworth and Co. Ltd., London, England.

This book explores the question of whether the solution of ecological problems requires a moral or metaphysical revolution. It begins with two chapters which are essentially historical and describe those Western traditions and values which tend to encourage and those which tend to curb man's ecological destructiveness. These traditions are important for an understanding not only of why people behave as they do but also in order to estimate what the prospects are that they can be persuaded to act differently. The next four chapters examine analytically four major ecological problems - pollution, resource depletion, destruction of species, and over-population. The author tries to bring out the fundamental moral, metaphysical and political assumptions that so often underlie the arguments of scientists. In the final chapter the author examines what the West must reject and what it must retain, if there is to be any prospect of solving the problems which confront it. He

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argues that the modern West leaves open more options than most other societies; it has the capacity to change. While its central Stoic-Christian traditions are not favourable to the solution of its ecological problems, they are not the only Western traditions and their influence is declining.

636. Sewell, W. R. Derrick.  
1971 Environmental perceptions and attitudes of engineers and  
CAN public health officials.  
Environment and Behavior, March 1971, pages 23-59.

The role of the professional has become increasingly important in both advisory and decision-making functions in government and industry, especially in the management of natural resources and environmental quality. Nonetheless, the condition of the environment has been progressively deteriorating. This paper asks the basic question: Why have experts failed to correctly diagnose problems and propose effective solutions? Up until 1971, the perceptions and attitudes of environmental experts had never been systematically studied. The two studies here described throw some light on how experts, specifically engineers and public health officials, perceive the problems with which they deal and the solutions they propose, and their attitudes toward their own role and the role of others in dealing with problems of environmental quality; they also identify some of the factors which influence such perceptions.

The detailed results indicate that the attitudes and perceptions of the two groups have the characteristics of a closed system, being highly conditioned by training, adherence to professional standards and practices, and allegiance to the agency's goals or mission. Contact with representatives of other agencies or the general public is considered either unnecessary or potential harmful. An attempt is made to account for variations in the results from perceptions and attitudes held by other professionals and the general public, and to determine which are the most significant, using 21 variables.

The author concludes with a discussion of three major changes necessary in the approach to environmental management: (1) a holistic rather than fragmented view of problems; (2) a much greater involvement of the public in the planning process; and (3) changes in administrative structures, laws, and policies to ensure the first two changes. He notes some of the difficulties involved in accomplishing these changes.

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637. Simpson, Cynthia J., et al.  
1976 Social-influence variations in evaluating managed and  
AM unmanaged forest areas.  
Journal of Applied Psychology, Volume 61, Number 6,  
pages 759-763.

Scenic beauty has achieved the status of a key natural resource, but aesthetic preferences for natural or untreated forest areas may conflict with ecologically sound woodland-management techniques. This study assesses the extent to which appreciation of the ecological benefits of forestry procedures would alter aesthetic judgements. The effects of two social anchoring devices--a live model's judgement and the judgement of hypothetical others--were compared with having subjects read a persuasive message favouring certain forest-treatment techniques. Results clearly indicated that aesthetic judgements can be changed by didactic information on environmental consequences. Modelling and norm provision elevated subjects' ratings of all landscape slides but the informational message only altered tolerance for some landscapes. Implications for forest-use policy are discussed.

638. Starrs, Cathy.  
1976 Canadians in Conversation about the Future, 171 pages.  
CAN Office of the Science Advisor, Environment Canada,  
Ottawa, Report No. 12.  
A working document for the Conserver Society Theme of  
The Advanced Concepts Centre.

This working document describes the results of an informal survey of attitudes about Canada's present and future, based on conversations with about 120 Canadians. The project was intended to help the then newly-formed Advanced Concepts Centre to determine the questions which it might usefully address. Interviewees were asked to respond to three opening questions: (1) What do you understand to be going on today--in your community, your province, Canada, the world? Pick the starting point that most appeals to you. (2) What are your images of a most likely and/or most desirable future? (3) What do you consider the most critical issues which will determine whether or not we achieve a viable future? Interviewees were selected according to three sources: individuals recommended by a small group involved in what could be called the first "futures" exercise legitimated by the federal government in 1970-71; by federal officials approached by the Director of the Centre; and by interviewees themselves.

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The author presents her findings according to four major headings: Canada 1975/75, Canada Future, Canadian Society, and Critical Issues. The syntheses of the conversations are highlighted with quotes from the interviews. Concern with the natural environment is one of many concerns. Chapter VIII summarizes the dominant values, attitudes, and perceptions about the present and future. The author explores the implications of these findings for policy and makes some tentative recommendations. The strongest and most consistently expressed recommendation by interviewees was that a national dialogue be launched "with the purpose of engaging all Canadians in understanding the nature of the dilemmas facing us and the opportunities and challenges they present".

639. Thompson, Dixon and Maurice Nelischer.  
Oskuna k̄ā āsusteki: Changing landscapes and changing attitudes.  
CAN Landscape Planning. Special Canadian issue. To be published.

The thesis of this paper is that a lack of knowledge and attitudinal problems underlie many of the adverse environmental impacts on western Canadian landscapes. An accurate cultural perception of physical and psychological realities is as important in the management of landscapes as are scientific and technical methods, partly because it affects the way in which resources are treated and partly because it affects the methodological tools and concepts used in resource management. It is only beginning to be recognized that planning, the application of technology, and resource and landscape management must be site- and culture-specific. The authors illustrate through anecdotes what some of our cultural myths and misconceptions are and how these difficulties are being resolved.

640. Tuan, Yi-Fu.  
1971 Man and Nature, 49 pages.  
AM Association of American Geographers, Commission on College Geography, Washington, D.C. 20009, Resource Paper No. 10.

The author explores the theme of "man and nature" from a loosely dialectical approach, by posing one concept against the other. The first chapter examines the meaning of the phrase and of the words. Man as a biological organism, subject to nature, is then contrasted with man as an agent of change, subduing nature. Chapter V looks

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at how man structures his world and arranges elements and events of nature to conform to his own sense of order. The consequences of this attempt to impose man-made schemata on nature are the focus of Chapter VI. Chapter VII deals with the impact of man's success as a species on the environment. Man's different attitudes toward and perceptions of his environment are surveyed historically and cross-culturally. The author includes more than 100 references.

641. Wohlwill, Joachim F.  
1978 What Belongs Where: Research on Fittingness of Man-made  
AM Structures in Natural Settings, 14 pages.  
College of Human Development, Pennsylvania State University,  
April 1978.  
Presented at the symposium on user-based methods in  
environmental aesthetics assessment, at meetings of The  
Environmental Design Research Association, Tucson,  
Arizona.

While controversies between environmentalists and development interests have revolved around issues of conservation and protection of environmental quality, aesthetic appearance has also played a prominent role in these debates. The individual's response to the congruity or fittingness between man-made and natural elements has, however, been little studied.

In this paper, a simulation approach is used to obtain subjects' appropriateness judgements of increasing levels of visual contrast and obtrusiveness of man-made elements in their natural landscape settings. Responses to three variables were tested: contrast, context, and meaning. Results supported the expectation that appropriateness judgements would vary inversely with the amount of contrast and obtrusiveness and that buildings which were functionally appropriate to their setting would receive higher appropriateness ratings than those which bore no essential relation to their landscape. The expectation that the perceiver would make more stringent demands on fittingness or congruence in a highly scenic setting was not supported by the data; the author discusses possible reasons for this unanticipated result. Study limitations are described and areas for further research suggested.

642. Wohlwill, Joachim F.  
A psychologist looks at land use.  
AM Environmental Review, to be published.

The author examines three land-use aspects of relevance to environmental psychology: (1) the impact of land use on the senses; (2) attitudes, values, and feelings toward the environment; and

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(3) behaviour. In illustration, several environmental psychology studies of relevance to land-use issues are described and two case studies are discussed in some detail.

While environmental psychologists have concerned themselves with the effects of environmental conditions on behaviour, the environmental problems of pollution, resource depletion, land use, etc. have been largely ignored; "for a comprehensive treatment of environmental-problem related issues, it becomes essential to formulate the environment-behavior relationship as a reciprocal one, i.e., as environment affecting behavior, with resulting changes in behavior that may affect the environment in turn, in a true feedback loop". The author suggests new or relatively unexplored areas of research for environmental psychology vis-à-vis land use and other environmental issues and discusses some of the problems involved in the trans-disciplinary research effort required by environmental issues.

643. Wohlwill, Joachim F. and Harry Heft.  
1977 A comparative study of user attitudes towards development  
AM and facilities in two contrasting natural recreation  
areas.  
Journal of Leisure Research, Volume 9, Number 4,  
pages 264-280.

This research paper explores the hypothesis that attitudes toward development and the provision of facilities and amenities will be more favourable among users of more highly developed areas. The attitudes of groups of users of two natural recreation areas in Pennsylvania, which differ in their degree of development, were compared. The first study reported confirmed the hypothesis. The second study re-affirmed the hypothesis and extended the previous findings. The authors discuss the implications of the positive feedback process suggested by the study findings for the management of natural recreation areas.

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Other Related Items

- I. 124, 129.
- II. 236.
- III. —
- IV. 402.
- V. 522, 526.
- VI. 601-643.
- VII. —
- VIII. 803.

## VII. PUBLIC PARTICIPATION

Most of the documents in this category concern citizen involvement in the various aspects of environmental planning and management. However, a number are not issue-related and many more have an application beyond the context of a particular environment or problem.

The items under State of the Art survey the history, philosophy, and development of public participation. Most of them relate directly to some specific planning context, although others are more general in nature. Policy Development is a diverse section, examining how and why public participation may play a part in environmental planning and how the process of involvement may develop in the future. The documents in the Methodology section examine different approaches to, and methods of, encouraging participation, as well as techniques for evaluating and using public input. The last section contains specific case studies.

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### State of the Art

See also item 718.

701. Bregha, Francis J.  
1973 Public Participation in Planning Policy and Programme,  
CAN 40 pages.  
Prepared for Ontario Ministry of Culture and Recreation.

The first three chapters give a general overview of the history, philosophy, concepts, and experiences in participation, aimed at those for whom the subject is relatively new or those who may wish to refresh their memories. Chapters 4 and 5 present a detailed model for involving citizens in decision-making, particularly in governmental agencies, and are directed toward politicians, policy-makers and implementators, planners, and administrators.

702. Elder, P. S., editor.  
n.d. Environmental Management and Public Participation,  
(c. 1975) 384 pages.  
CAN The Canadian Environmental Law Research Foundation  
and The Canadian Environmental Law Association.

This volume is a collection of 12 articles on public participation in environmental decision-making, applying theory to practice. Several are published here for the first time.

Bob Gibson. The value of participation.

C. G. Morley. The legal framework for public participation in Canadian Water Management.

R. T. Franson and A. R. Lucas. Environmental decision making in British Columbia.

P. S. Elder. The participatory environment in Alberta.

C. Booy. Environmental management and public participation in Manitoba.

A. W. Bryant. An analysis of the Ontario Water Resources Act.

David Estrin. The legal and administrative management of Ontario's air resources 1967-74.

Patrick Kenniff and Lorne Giroux. The law relating to the protection and quality of the environment in Quebec.

D. Paul Emond. A critical evaluation of the environmental protection laws in the Maritime Provinces (and more particularly the Nova Scotia Environmental Protection Act).

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A. R. Lucas and Sandra K. McCallum. Looking at environmental impact assessment.

J. F. Castrilli, David Estrin, and John Swaigen. An environmental impact assessment statute for Ontario with commentary.

P. S. Elder. An overview of the participatory environment in Canada.

703. Erickson, David L. and Adam Clarke Davis.  
n.d. Public involvement in recreation resources decision making.  
(c. 1975) Proceedings of the Southern States Recreation Research  
AM Application Workshop, pages 191-215.  
Southeastern Forest Experiment Station, USDA Forest Service, Asheville, North Carolina.

While many natural resource agencies are now required to include public participation in the decision-making process, these mandates often lack specificity and a number of important questions need to be addressed, e.g., who is the public? how should they be involved? on what issues? at what stage in the decision-making process? The authors discuss some of these questions, specifically, the pros and cons of public involvement, 12 "principles" of effective public involvement by agencies, and existing techniques of obtaining public involvement. They conclude that "formulas" for public involvement do not as yet exist because most research has been of a descriptive nature rather than comparative, and no criterion of effective public involvement has been developed. They suggest 6 areas in which research needs to be done. Appended is an extensive reference list (over 120 items) as well as a list of leading scientists (over 50) in the field, with addresses.

704. Farrell, G. M., J. P. Melin, and S. R. Stacey, Consultant group Limited.  
n.d. Involvement: A Saskatchewan Perspective, 54 pages.  
(c. 1974) Prepared for the Department of the Environment, Government  
CAN of Saskatchewan.

This document was prepared for the Government of Saskatchewan, in order that the Department of the Environment might develop effective involvement strategies with clear objectives in mind. The first part of the report gives an introduction to the citizen involvement process and in particular, the situation in Saskatchewan. This is followed by a discussion of the need for public involvement and the various contexts in which it may occur. The second part identifies 7 types of involvement, characterized by the nature of the process involved. The authors discuss how to design and evaluate involvement and the specific technique best suited to each involvement type. Finally, there is included a bibliography of literature on public involvement.

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705. Ontario. Committee on Government Productivity.  
1972 Citizen Involvement. A Working Paper Prepared for the  
CAN Committee on Government Productivity, 50 pages.  
Available from Queen's Printer, Ferguson Block, Queen's  
Park, Toronto, Ontario, April 1972.

This publication synthesizes the majority of ideas developed during a two-day conference on citizen involvement organized by the C.O.G.P. The delegates included both governmental and non-governmental representatives. Section One attempts to examine some characteristics of the citizen participation phenomenon, looking at both the federal and provincial levels. In Section Two, the various pressures that have led to a rise in demand for participation are examined. Section Three concerns itself with the question of whether participation should be encouraged or discouraged. Finally, Section Four suggests initial steps that the provincial government could take if it wishes to encourage participation. Section Five summarizes the major conclusions and the appendices contain a list of delegates to the conference and the papers given.

706. Rosenbaum, Nelson M.  
1976 Citizen Involvement in Land Use Governance: Issues and  
AM Methods, 82 pages.  
The Urban Institute, Washington, D.C. URI 11500.

Citizen involvement is now very much a part of land-use governance, but much dissatisfaction exists among citizen groups as well as decision-makers with the quality of such participation because legislative mandates often lack a well-conceived commitment to a particular concept of democratic participation. The objectives and structures of citizen involvement need to be made more precise and explicit in order to narrow the gap between expectations and reality. The purpose of this study is to provide legislators, elected officials, and concerned citizens with the conceptual background necessary to take a more active role in the design and structure of citizen involvement programs. The author describes the historical origins and objectives of citizen involvement, and proposes a model framework for citizen involvement programs applicable to a wide range of conditions and jurisdictions in the context of land use. Major program design issues as well as methods and techniques for implementation are examined. The author concludes with an analysis of the costs and benefits of citizen involvement.

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707. Sadler, Barry, editor.  
1978 Involvement and Environment: Proceedings of The  
CAN/ Canadian Conference on Public Participation.  
AM/ Volume I: A Review of Issues and Approaches, 186 pages.  
INT The Environment Council of Alberta, 2100 College Plaza  
Tower 3, 8215 - 112 Street, Edmonton, Alberta T6G 2M4.  
Organized by The Environmental Conservation Authority  
of Alberta and The Banff School of the Environment.

The 11 papers in this collection are the formal proceedings of The Canadian Conference on Public Participation, the basic aim of which was to take stock of the field. The concerns of citizens, practitioners, and academics are represented. Much of the discussion revolves around the theme of social concern about the quality of the environment. This volume provides a sample coverage of the contemporary scene in public participation. (A second volume consists of more detailed case studies of particular efforts in public participation.)

Barry Sadler. Basic issues in public participation: A background perspective.

J. Gordon Nelson. Setting the stage.

James A. Draper. Evolution of citizen participation in Canada.

Alastair R. Lucas. Fundamental prerequisites for citizen participation.

Desmond M. Connor. Models and techniques of citizen participation.

Linda Christiansen-Ruffman and Barry Stuart. Actors and processes in citizen participation: Negative aspects of reliance on professionals.

Peter Homenuck, Jerry Durlak, and Jim Morgenstern. Evaluation of public participation programs.

Francis J. Bregha. Further directions for public participation in Canada.

Roger E. Kasperson. Citizen participation in environmental policy-making: The U.S.A. experience.

Timothy O'Riordan. Participation through objection: Some thoughts on the U.K. experience.

Carson H. Templeton. Appendix 1: The Great Pipeline Debate of 1977.

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708. Weiss, Michael E.  
1974 A Study of Public Participation in Highway Planning and  
AM Decision Making, 200 pages.  
Texas Transportation Institute, Texas A&M University,  
College Station, Texas. Research Paper 148-5.  
August 1974.  
Prepared for Texas Highway Department in cooperation  
with U.S. Department of Transportation, Federal Highway  
Administration. (Research Study Number 2-1-71-148.)

The objectives of this study were to survey the literature, and to present a synthesis and analysis of concepts and techniques applicable to public participation activities and the implementation of participation techniques in the Texas Highway Department. The report addresses the following issues: theories in public participation, models for citizen participation, decision-making and the public, characteristics and behaviour patterns of participants, the securing of public goals and attitudes, survey research, and public hearing problems and techniques.

709. Wireman, Peggy.  
1977 Citizen participation.  
AM Encyclopedia of Social Work, Seventeenth Issue, Volume 1,  
pages 175-180.

In this article the author discusses the purposes of citizen participation and the possible benefits, and gives an historical overview of purposes, types, successes, shortcomings and changes in citizen participation from the 1950s to mid-1970s. She looks at the impact of citizen participation and the reasons why the expected outcomes have been less than anticipated. She notes the conditions for successful participation and also cites the gains made in the 1970s. The role of the social worker, his position in the community structure, and the contributions which he can make to enhance successful citizen participation in his community are stated and elucidated.

### Policy Development

See also items 705, 707, 723.

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710. Hendee, John C., Roger N. Clark, and George H. Stankey.  
1974 A framework for agency use of public input in resource  
AM decision-making.  
Journal of Soil and Water Conservation, Volume 29,  
Number 2, March-April 1974, pages 60-66.

The authors propose a five-process framework for using public input in resource decision-making. Though interdependent, these processes--issue definition, collection, analysis, evaluation, and decision implementation--must be kept separate because mixing can seriously affect usefulness of the public input. The authors argue that public involvement must become a fundamental part of resource decision-making and must be rigorously designed to allow for both accountability and reliability. Discussed are the resource manager's responsibilities in public involvement, types and quality of public input, problems of evaluation, and the role of public input in decision-making.

711. Lind, Alden.  
1975 The future of citizen involvement.  
AM The Futurist, December 1975, pages 316-323.

Americans are increasingly mistrustful of, lacking confidence in, and alienated from government and other institutions. Lind believes that this trend might be reversed through public participation in the political process. He describes various types of involvement programs and explains why involvement may grow in the future.

712. Maurer, K. F.  
1978 A Public Participation Program for the Ontario Environ-  
CAN mental Assessment Board: An In-Depth and Multi-Faceted  
Approach to the Design of a Public Participation Program,  
170 pages.  
Ontario Environmental Assessment Board, Toronto, Ontario,  
February 1978.

This report was requested by Ontario's EAB to prepare for its new responsibilities in the conduct of public hearings in environmental assessment decision-making, in accordance with The Environmental Assessment Act of October 1976. The author presents a number of options for the Board in the design of a public participation program, based on input from other agencies with such programs, from participants in former Board hearings, from board members, and a variety of experts. Topics addressed include: policy guidelines, EAB and public information, interaction with the public, public assistance, EAB's public image, procedures for the conduct of hearings, and the needs and interests of Board and staff. The report includes an executive summary and study questionnaires.

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713. Morley, C. G.  
1975     The Legal Framework for Public Participation in Canadian  
CAN     Water Management, 64 pages.  
Inland Waters Directorate, Ontario Region, Water Planning  
and Management Branch, Environment Canada, Burlington,  
Ontario. Social Science Series Number 14.  
French version available.

Prepared for The Social Sciences Division of The Inland Waters Directorate, Ontario Region, Environment Canada, this report discusses in detail the body of common law and the various federal and provincial legislation pertaining to the legal grounds for public participation in Canada. This critical examination finds commitment to public participation inadequate in Canadian law, and the author recommends that effective public participation in decision-making must be established by legislation as a legal right, not a privilege subject to discretion or policy. A possible process for including public participation in environmental decision-making is suggested.

714. Priscoli, Jerry Delli.  
1975     Citizen advisory groups and conflict resolution in  
AM     regional water resources planning.  
Water Resources Bulletin, American Water Resources  
Association, Volume 11, Number 6, December 1975,  
pages 1233-1243.

This paper examines the degree to which public participation leads to conflict resolution and consensus, as a result of the establishment of two-way communication. The methodology used to answer this question and the data obtained are described and tabulated. The summary notes the following conclusions: (1) planners' and citizens' views of their interactions are frequently in opposition; (2) the data collected do not support the hypothesis that citizen advisory groups enhance the flow of effective communication for the purpose of common understanding; (3) this finding questions the conflict-resolving utility of citizen advisory groups and raises the question that participation programs might encourage citizen alienation.

715. Priscoli, Jerry Delli.  
1978     Why the Federal and Regional Interest in Public Involvement  
AM     in Water Resources Development, 24 pages.  
U.S. Army Engineer, Institute for Water Resources, Fort  
Belvoir, Virginia. Working Paper 78-1. January 1978.

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This paper addresses itself to the limits and potentials of public involvement in resolving the following questions: (1) who decides alternatives--experts or citizens? (2) is planning administrative or legislative? (3) how can government know if it is effective? (4) how can impacts of plans be projected? (5) how can regional needs be reconciled with the realities of jurisdictional boundaries? Each issue is discussed and concluding recommendations are made, based on the premise that public involvement is a philosophy, approach or strategy and not a technique.

716. Priscoli, Jerry Delli.  
1978      Public Involvement and Social Impact Analysis: A Union  
AM        Seeking Marriage, 24 pages.  
          U.S. Army Engineer, Institute for Water Resources,  
          Kingman Building, Fort Belvoir, Virginia 22060.  
          Working Paper 78-2. January 1978.

Analyzing public involvement in the context of social impact assessment, Priscoli states the need for an interactive planning process where public participation and other planning functions are constantly interacting and interdependent. Implications for planners and their organizations are then explored in the context of water resource planning. The direct relationships and specific implications of public involvement and SIA follow, with rationale and issues in public participation being especially emphasized. With these, as well as examples and cases, the need for new planning frameworks is defined.

717. Robinson, David L.  
1976      Prospects and Potential for Public Participation in  
CAN        Environmental Management: A Perspective, 30 pages.  
          Canada Centre for Inland Waters, Environment Canada,  
          Burlington, Ontario. April 1976.  
          An unpublished Working Paper.

This paper, prepared for The Environmental Management Service (Environment Canada) Workshop on Public Participation, May 1976, examines the present and future context for public participation in environmental management. Environmental management is seen as an important way in which growth in general can be guided. Basic arguments for public participation in environmental management are: (1) improvement in the efficiency of environmental management; (2) it will create a social climate within which more environmentally appropriate behaviour can evolve; (3) it can channel the growing public awareness and pressures for involvement, in socially and environmentally constructive ways. The author examines the implications for environmental management of resource limits, social

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diversity, rise of individualism, growth of big government, and neglect of potential for public involvement, and concludes that a "participatory democracy" must be developed to cope with problems in a climate of relative stability and individual freedom. A strategy for incorporating public participation into environmental management is developed.

718. Sewell, W. R. Derrick and Timothy O'Riordan.  
1976 The culture of participation in environmental decision-  
CAN/AM/ making.  
INT Natural Resources Journal, The University of New Mexico,  
School of Law, January 1976, 21 pages.

Over the last 10 years opportunities for public input into policy decisions have increased enormously. However, criticisms of the present system still exist, mainly because in the past public views have been interpreted incorrectly, and demand is growing for greater power sharing. The authors examine recent experiences in the U.S., Canada and the U.K. to illustrate responses to this increased public pressure. This is followed by an attempt to evaluate the influence of political culture on participation under the sub-headings; (1) Passivity-activity in the body politic; (2) The scope of discretion; (3) Bargaining versus consultation; and (4) The role of environmental law. This is followed by sections on the criteria for evaluating participation, the evolution of participation, and its future directions.

719. Toffler, Alvin.  
1975 What is anticipatory democracy?  
AM The Futurist, October 1975, pages 224-229.

"Anticipatory democracy is a process--a way of reaching decisions that determine our future." Toffler, the originator of this term, explains here what it is and what he thinks it can accomplish. A/D is designed to cope with the lack of future consciousness and the lack of citizen participation. He lists and explains eleven forms of A/D activities and notes that we need to invent many additional kinds of A/D activity.

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720. University of Massachusetts, Institute for Man and His Environment.  
1972 Citizen Task Force on Environmental Reorganization:  
AM Synopses of the Task Force Reports, 68 pages.  
Cooperative Extension Service, University of Massachusetts,  
Amherst, Massachusetts, November 1972.  
Prepared for The Executive Office of Environmental Affairs  
of The Commonwealth of Massachusetts.

This is a synopses of the final reports of 8 volunteer task forces who were asked by the Commonwealth of Massachusetts to develop background material required to justify changes in the state's present structure as it relates to environmental affairs. Each task force reported here their specific concerns and made recommendations in one of the following areas: (1) agriculture and land resources; (2) education and communications; (3) energy resources; (4) environmental quality; (5) human resources; (6) ocean resources; (7) open spaces and recreation resources; and (8) water resources. The members of each task force are listed herein, along with an organizational chart of the present governmental structure of environmental affairs.

### Methodologies

See also items 701, 703, 704, 706, 707, 708, 710, 715, 731, 732.

721. Cashdan, Lisa, et al.  
1978 A Critical Framework for Participatory Approaches to  
AM Environmental Change, 10 pages.  
Working Group on Participation, Center for Human  
Environments, Graduate Center of The City University  
of New York, 33 W. 42 Street, New York, New York 10036.

This paper sets out for discussion a number of critical issues by which it is possible to evaluate participatory approaches to environmental change. The five approaches are: (1) grassroots, (2) technical assistance, (3) design and planning firms, (4) action-research, (5) governmental. The approaches chosen are not a comprehensive listing. However, the critical framework that is developed in the paper could be applied to other approaches. The critical framework includes: (1) the genesis of the approach; (2) who the participants are and what their roles are; (3) what techniques and processes are used; (4) what human development occurs from the approach; (5) whether environmental change results; and (6) the sociopolitical implications of each.

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722. Clark, Roger N. and George H. Stankey.  
1976 Analyzing public input to resource decisions: Criteria,  
AM principles and case examples of the Codinvolve System.  
Natural Resources Journal, Volume 16, Number 1,  
January 1976, pages 213-236.

Due to the volume of input and complexity of issues, efficient use of public input in forest resource management is often a difficult problem for decision-makers. The authors present their Codinvolve System as an objective, systematic, replicable method of analyzing and summarizing public input. It is suitable for edge-punch, card-sorting techniques and readily adaptable for computer use. Codinvolve can incorporate diverse forms of both structured and unstructured public input, and present results in a format suitable for evaluation. The authors stress the importance of keeping analysis (objective) separate from evaluation (subjective). Four case studies illustrate the use of Codinvolve.

723. Connor, Desmond M.  
1977 Constructive citizen participation: The development  
CAN and selling of a concept.  
Social Impact Assessment 13/18, January-June 1977,  
pages 8-16.

In the middle to late sixties, a number of planning projects encountered public opposition and were delayed or cancelled completely. The author, a sociologist, was called in as a consultant to a number of federal agencies, in an attempt to find a solution to the problem. In this paper he outlines the concept of "Constructive Citizen Participation", how it was developed, and how attempts were made to diffuse it widely.

724. Guseman, Patricia K. and Judith M. Hall.  
1977 Identification of Minority Community Leadership for  
AM Involvement in Transportation Project Planning, 144 pages.  
Texas Transportation Institute, Texas A&M University,  
College Station, Texas. (Research Report 190-2),  
January 1977.  
Prepared for the State Department of Highways and Public  
Transportation in cooperation with the Federal Highway  
Administration, U.S. Department of Transportation.  
(Research Study Number 2-8-75-190.)

The objectives of this research are to evolve leadership identification techniques, the assessment of these techniques, evaluation of the "representativeness" of leaders thus identified, and a proposed strategy for the involvement of identified leaders, with respect to members of minority communities. Three general techniques are identified, described, evaluated, and summarized: (a) the positional

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approach; (b) the decisional approach; and (c) the reputation approach. The degree of overlap among leadership types identified through these techniques, and the representativeness of identified leaders is examined. Lastly, the authors present modes for implementing the minority leadership identification techniques proposed in the research as well as an outline for involving minority leaders meaningfully and early in project planning.

725. Runyan, Dean.

1977 Tools for community-managed impact assessment.  
AM American Institute of Planners Journal, April 1977,  
pages 125-135.

This article aims to identify ways to increase the effectiveness of local involvement in governmental and other planning decision-making, by examining techniques that can be used by local groups. Those identified may also be useful to public or private planning agencies. Twelve impact assessment techniques are evaluated for their relative usefulness to community and interest groups involved in planning decisions in impact assessment: checklists, IMPASSE, dialectical scanning, Delbecq technique, Delphi, scenarios and surveys, trend extrapolation, cost-benefit analysis, cost effectiveness analysis, cross impact, simulation-modelling, and input-output analysis. However, the techniques most suitable for local groups all have the weakness of not necessarily drawing on the experience or data from outside these groups' background. A project comparisons technique, with a step-by-step procedure, is proposed to compensate for this disadvantage.

726. Sinclair, G. W. "Sinc".

1972 Canada-British Columbia Okanagan Basin Agreement.  
CAN Task 171. The Public Involvement Program.  
G. W. Sinclair & Associates Ltd., Edmonton, Alberta,  
September 1972.  
Prepared for the Okanagan Study Committee. Background  
Working Paper Number 1. Preliminary and subject to  
revision.

This preliminary report, the first of several working papers, was aimed at residents of B.C.'s Okanagan Valley. It describes the Public Involvement Program (PIP)--philosophy, goals, format of participation, information input and output--and how to get involved. The goal of PIP was to report the preferences of Valley residents on economic, social, and environmental implications of various water management alternatives; the program was centered on the "interest-based planning model". The expected stages of the PIP process are described. A final report outlining PIP successes and failures was to appear in the summer of 1973, followed by another report summarizing the actions and recommendations of citizen task forces.

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727. Texas A&M University, Department of Urban and Regional Planning.  
1976 Plan of Action: The Trinity River Public Involvement  
AM Programs, 46 pages.  
Prepared for The Fort Worth District, U.S. Army Corps  
of Engineers, September 1976.

Plan of Action is the final draft prepared for the Fort Worth District, U.S. Army Corps of Engineers, outlining in detail the organization for public participation in water resource alternatives pertaining to the Trinity River. It includes a method for the delineation of the planning area, delineation and composition of the Citizens Assistance Groups, and the administration of Citizens Assistance Group meetings. Also included is an After Action Report outlining future activities for analysis and progress evaluation.

728. Weiss, Michael E. and Theron K. Fuller.  
1976 A Methodology for Evaluating the Public Involvement  
AM Process Used in Project Planning, 186 pages.  
Texas Transportation Institute, Texas A&M University,  
College Station, Texas. (Research Report 190-3F),  
November 1976.  
Prepared for State Department of Highways and Public  
Transportation, Federal Highway Administration.  
(Study 2-8-75-190.)

The purpose of this study is to develop methodologies and analysis for the evaluation of the public involvement techniques used by the Texas State Department of Highways and Public Transportation (SDHPT). Procedures followed in the research were:

- (1) Survey questionnaire administered to public participants to determine public attitudes about participation;
- (2) Survey of SDHPT District Engineers to determine public involvement techniques used, techniques preferred, and their opinions and attitudes about the involvement process;
- (3) A description of the systems approach to evaluating public involvement techniques;
- (4) Descriptions of the field-tested random sample survey and the public participant survey, the latter used for citizens who have been formerly involved in participation;
- (5) A description of the SDHPT self-evaluation technique developed to monitor the various aspects of the involvement process and identify possible problem areas.

Summary and recommendations for future work conclude this research.

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729. Wireman, Peggy.

1977 Building good advisory committees: Some important  
AM considerations.  
Citizen Participation Certification for Community  
Development: A Reader on the Citizen Participation  
Process, edited by Patricia Marshall, pages 72-76.  
National Association of Housing and Redevelopment  
Officials, Washington, D.C., February 1977.

Wireman addresses herself to the essential components necessary to create effective advisory committees, so that the pitfalls and negative impacts of this device may be avoided. The components discussed are: (a) citizen training in group processes, in how agencies operate, and in the technicalities of the appropriate programs; (b) the building of open communication between the citizens group and the specific agency; (c) the establishment of a representative and responsive citizens committee and methods of selection for the committees, listing the pros and cons of each method; and (d) good communication by the group and the agency, with the community they represent. In conclusion, the author poses 6 questions that might be asked in evaluating the adequacy of a citizen participation structure.

730. Wojick, David E.

1978 Planning for Discourse: A Manual for the Diagnoses,  
AM Planning and Management of Group Participation Processes  
Based upon the Use of Issue Analysis Measures, 53 pages.  
Prepared for U.S. Army Engineer, Institute for Water  
Resources, Fort Belvoir, Virginia, (IWR Contract  
Report 78-1), January 1978.  
Available from National Technical Information Service,  
U.S. Department of Commerce, Springfield, Virginia 22151.

This document is a manual on how to improve public meetings, in the framework of issue analysis. In an "issue tree", all the aspects of an issue are shown hierarchically to facilitate the spotting of problems, misunderstandings, conceptual confusions, and unresolved issues. Issue analysis helps planners and managers to evaluate group output and spot problem areas, using a number of different variables (e.g., quality of discourse, redundancy, depth). Issue analysis is applicable whenever several courses of action and a large number of factors must be considered. It is appropriate for different group sizes and types. Sample analyses are included in the manual.

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### Case Studies

See also items 707, 722.

731. Grima, A. P. and C. Wilson-Hodges.  
1977 Regulation of Great Lakes water levels: The public  
CAN/ speaks out.  
AM Journal of Great Lakes Research, Volume 3, Numbers 3-4,  
December 1977, pages 240-257.

In 1964, the problem of Great Lakes water level fluctuations was referred to the International Joint Commission, which held public hearings as an integral part of the reference procedure. This research, focusing mainly on the transcripts of the 1974 hearings, has two stated major objectives: (a) to analyze views of the public's input regarding water level fluctuation, using content/contingency analysis for the purpose of illustrating the value and versatility of the technique in public participation in general, and public hearings in particular; (b) to discuss content/contingency analysis as a technique for evaluating public input, with a description of the research design. The conclusion notes inherent differences in verbal behaviour and emphasis on solutions between federal/state/provincial government groups and municipal government/private associations/individuals.

732. Vindasius, Dana.  
1974 Public Participation Techniques and Methodologies: A  
CAN/ Résumé, 30 pages.  
AM Inland Waters Directorate, Water Planning and Management  
Branch, Environment Canada, Ottawa, Ontario. Social  
Science Series Number 12.

This document reviews 12 cases of public involvement in Canada and the U.S. and, where possible, attempts to compare and contrast successful with less successful projects. This is followed by a brief analysis of the case studies and a discussion of various public participation techniques. Finally, a general model is presented for a participation program in river basins where comprehensive water management is proposed or already in progress. The report includes a number of references and a selected bibliography.

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Other Related Items

- I. 121, 129.
- II. 206, 208, 230, 242, 254.
- III. 336.
- IV. —
- V. —
- VI. 619, 636, 638.
- VII. 701-732.
- VIII. 804.

## VIII. BIBLIOGRAPHIES

The items in this category are arranged simply alphabetically rather than by heading, as they are few in number. In most cases, the titles are self-explanatory. The annotations attempt to describe the scope of each bibliography and its physical composition. Wherever possible, the total number of references is stated or estimated, and the country of origin, of the references, is given.

## VIII. BIBLIOGRAPHIES

801. Anderson, Dennis and Carman Cullen.  
1978 A Review and Annotation of Energy Research on Consumers.  
CAN/ Faculty of Administrative Studies, University of Manitoba,  
AM Winnipeg, Manitoba. March 1978.  
Prepared for Consumer Research Branch, Department of  
Consumer and Corporate Affairs, Ottawa, Ontario.

This report attempts to provide an indication of the state of the art in energy research on consumers in North America. The main body of the work is an annotated bibliography of empirical studies (arranged alphabetically by author), although some purely descriptive reports are also included. The annotations of the empirical studies are given a standard form, that is, they are divided into three sections: Method, Variables, and Findings. The descriptive studies have only one heading for the annotation: Abstract. However, the scope of this report is much greater than a simple bibliography, as it attempts also to summarize in tabular form the results of the literature search, so that one may obtain a view of what is currently known about specific problems. The references are primarily either Canadian or American.

802. Armour, Audrey.  
1978 Community Impact Assessment. Assessing the Impacts of  
CAN/ Projects and Programs on Local Communities and Neigh-  
AM bourhoods: An Annotated Bibliography, 6 pages.  
Faculty of Environmental Studies, York University,  
Downsview, Ontario. January 1978, revised September  
1978.

Armour, Audrey and Reg Lang.  
1978 Social Impact Assessment: An Annotated Bibliography,  
CAN/ 9 pages.  
AM Faculty of Environmental Studies, York University,  
Downsview, Ontario. October 1977, revised September  
1978.

These two bibliographies form part of a larger bibliography in the process of being prepared by Armour and Lang on environmental impact assessment. The references are not yet organized by category, but it appears that the key dimensions of SIA are represented, for example: Overview, Methodology, State of the Art. Both Canadian and American works are included. About 100 references are noted, with the majority published within the last 5 years.

VIII. BIBLIOGRAPHIES

803. Arthur, Louise M. and Ron S. Boster.  
1976 Measuring Scenic Beauty: A Selected Annotated Bibliography,  
AM/ 34 pages.  
CAN/ U.S. Department of Agriculture, USDA Forest Service,  
INT Rocky Mountain Forest and Range Experiment Station,  
Forest Service, Fort Collins, Colorado 80521. General  
Technical Report RM-25. May 1976.

Each of the 167 papers in this bibliography is annotated; many also include a critical comment by the compilers and/or a listing of headings or chapters. The literature is divided into four categories: Literature Reviews, Inventory Methods, Public Involvement, and Miscellaneous (procedures for measuring or assessing scenic beauty that do not fit one of the other categories or are borderline between one or more categories). The Public Involvement section consists primarily of literature on individual and public perceptions, attitudes, and behaviour vis-à-vis environments of various kinds, including measurement and prediction models. An author index is included to help readers find works by a particular author. Papers on natural as well as urban environments are listed. The majority of documents are of American origin; some Canadian and European works are also included.

804. Burton, Thomas L. and Annette Wildgoose.  
1977 Public Participation: A General Bibliography and  
CAN/ Annotated Review of the Canadian Experience, 129 pages.  
AM/ Prepared for The Canadian Conference on Public Participation.  
INT Sponsored by The Environment Conservation Authority of  
Alberta and The Banff School of the Environment.  
Prepared at the request of The Programme Planning  
Committee.

This is a bibliography prepared for the Canadian Conference on Public Participation. It includes an analytical review of public participation in Canada, an annotated bibliography of case studies, and a general reference and bibliography section. The annotated bibliography of case studies section contains approximately 100 items and the general reference section contains 95 items, which are basically Canadian with some American and British references included.

805. Castonguay, Rachelle and Robert Lanari, compilers.  
1977 Bibliography: Socio-economic Impact Studies Relating to  
CAN Pipeline Projects and Certain Northern Development  
Projects, 27 pages.  
Northern Research Division, Department of Indian Affairs  
and Northern Development, Ottawa, Ontario, January 1977.

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This bibliography compiles socioeconomic impact studies relating to projects which include the Alaska pipeline, the Mackenzie Valley pipeline, the James Bay hydroelectric project, the Churchill Hydro project, the Strathcona mining project, and the Yellowknife mining development. References are noted with standard bibliographic information, but are not annotated; they are organized according to pipeline or development project. All of the approximately 130 references are Canadian.

806. Cortese, Charles F. and Jane Archer Cortese.  
1978      The Social Effects of Energy Boomtowns in the West:  
AM      A Partially Annotated Bibliography, 30 pages.  
            Council of Planning Librarians, P.O. Box 229, Monticello, Illinois. Exchange Bibliography 1557, June 1978.

Information concerning the impacts of growth on boomtowns may be found in a variety of areas—the history of the West, the literature of classical sociology, community studies by sociologists, political scientists, and anthropologists, and in the literature on modernization and human ecology. This volume does not include this type of source but focuses on current research being done as a result of energy development, much of which is not easily accessible or is little known. About 200 references are listed, most with annotations. They include reports, proceedings, symposia, social and environmental impact studies, and journalistic accounts. When possible, the citation indicates where a copy of the document may be obtained. All the references are to United States publications.

807. Derow, Ellan O.  
1976      Social Impact Assessment: Annotated Bibliography,  
CAN/      75 pages.  
AM      Department of Sociology, McMaster University, Hamilton, Ontario.  
            Prepared for the Ontario Ministry of the Environment.

This bibliography lists and annotates SIA literature along the following dimensions: Philosophy, Concepts and General Overviews; Sociological Perspectives; Methodology; Public Participation and Legal Aspects; Actual Studies; Periodicals; and Bibliographies. Canadian and American material is included.

808. Glickfeld, Madelyn, Tom Whitney, and J. Eugene Grigsby III.  
1977      A Selective Analytical Bibliography for Social Impact  
AM      Assessment, 158 pages.  
            Department of Civil Engineering, Stanford University, Stanford, California. Report IPM-1, November 1977.

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This bibliography is part of the Stanford University research to investigate current research, development and application of SIA by all levels of government. It summarizes the findings of a literature search to identify useful SIA information and to monitor the state of the art. The bibliography covers behavioural science literature (knowledge base to SIA); case studies; SIA literature (SIA definitions, methodologies, rationale); and case studies where SIA is used in prediction or planning. The references are to United States publications.

809. Goldsmith, Bernice.  
1976 Environmental Impact Assessment: General and  
CAN/ Related Topics: An Annotated Bibliography,  
AM 49 pages.  
Concordia University, Sir George Williams Campus,  
Montreal, Quebec. First edition, July 1976.

About 200 references are included in the bibliography, most of them with annotations. The majority concern Environmental Impact Assessment, but social dimensions are the focus of many of the references. This section is classified according to: legal considerations, methodologies, bibliographies and reference sources. The other main section is of a more general nature, dealing with environmental management, public participation, and environmental quality, to name a few topics. The references are categorized as: concepts and philosophies, legal considerations, methodologies, and reference sources.

Also included in the document are: (1) a list of federal (Canadian) environmental legislation; (2) a list of provincial environmental legislation; (3) journal titles which contain articles on EIA and related subjects included in the bibliography; and (4) addresses of about 70 organizations in Canada and the U.S. concerned with environmental issues.

810. Johnson, Julia and Glenna Dunning.  
n.d. Land Planning in National Parks and Forests: A Selective  
(c. 1976) Bibliography, 68 pages.  
AM Council of Planning Librarians, P.O. Box 229, Monticello,  
Illinois 61856. Exchange Bibliography Number 1291-1292.

This bibliography contains annotated references on land planning in United States national parks and forests. The entries are limited to English language references either in U.S. government documents or papers in journals. The bibliography is arranged alphabetically by

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author, and the references are numbered consecutively; it contains 297 items. It is followed by a subject index which is arranged alphabetically and then a list of journal titles and addresses. Finally there is a list of journal indexes and another of additional sources of information.

811. Viohl, Richard C. Jr. and Kenneth G. M. Mason.  
n.d. Environmental Impact Assessment Methodologies: An  
(c. 1974) Annotated Bibliography, 32 pages.  
AM Council of Planning Librarians, P. O. Box 229,  
Monticello, Illinois 61856. Exchange Bibliography  
Number 691.

This bibliography reviews environmental assessment methodologies, with annotations designed to convey an objective picture of the salient aspects of each reference. Although not specifically social impact assessment, the methodologies are relevant to approaches considered or used for SIA. The bibliography is organized in two sections: the first deals with methodologies and systems for impact assessment; the second deals with "related issues and articles", or those references which contribute directly to the methodologies. A brief section on perspectives in the literature on environmental impact methodology is also included. The references are to United States publications.

812. Wall, Geoffrey.  
n.d. Impacts of Outdoor Recreation on the Environment, 19 pages.  
(c. 1977) Council of Planning Librarians, P.O. Box 229, Monticello,  
AM/CAN/INT Illinois 61856. Exchange Bibliography Number 1363.

Because of the growth of participation in outdoor recreation, major changes are being induced in the environment. This bibliography focuses on those changes brought about because of recreational usage of natural and semi-natural areas. The primary emphasis is on the impacts on soil, vegetation, wildlife and water quality, and only those references that are generally accessible are included. The author gives references to American, Canadian, British, and some European literature, which are arranged in alphabetical order and number approximately 180.

813. Wilkinson, Paul F.  
1978 Environmental Impact of Outdoor Recreation and Tourism:  
CAN/ A Bibliography, 89 pages.  
AM Faculty of Environmental Studies, York University,  
Downsview, Ontario.

## VIII. BIBLIOGRAPHIES

Under the general category of environmental impact, the author includes four broad classes of impact analysis: (1) economic impact, (2) ecological/physical impact, (3) social impact, and (4) psychological impact. In the introduction, he defines all four methods and explains their use and purpose. This is followed by an index arranged by subject headings and sub-headings, for example: 2. Camping, 2.1 General, 2.2 Environmental impact. This is followed by the bibliography which contains 887 numbered items arranged alphabetically by author. The majority of references are Canadian and American with a small number of items from outside North America.

## A PRELIMINARY RESEARCH NETWORK

The following network of researchers and organizations is designed to complement the annotated bibliography. It enables the reader to determine who some of the key researchers are, what their range of interests is, and where the research is being done.

The authors and editors whose works appear in the bibliography are listed with their addresses, where available, in the Researchers section. An indication of their range of interest is shown by the item numbers of their publications. (Those authors whose contributions appeared in a collection of articles are not indicated; in these cases, only the editor is listed.)

A similar list follows for organizations where research is being done, and includes universities, governmental departments and agencies, and private consulting firms. Where the organization has authored or issued a document which appears in the bibliography, the items are identified by number. In addition, the authors or editors affiliated with the organizations are listed; this is not intended to be a complete listing but identifies only those whose works appear in the bibliography.

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